EPSON
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UB-R03

Technical Reference Guide

Product Overview

This chapter explains the features of the product.

Installation

This chapter explains how to connect the UB-R03 to the TM printer and use it.

Utilities

This chapter explains the utility for setting the UB-R03.

Programming Samples

This chapter explains information for programming.

UB-R03 Specifications

This chapter explains the specification of the UB-R03.

Exchange from the UB-R02

This chapter explains how to replace the UB-R02 with the UB-R03.

M00002804
Rev. E

Cautions

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ESC/POS® Command System

EPSON has been taking industry's initiatives with its own POS printer command system (ESC/POS). ESC/POS has a large number of commands including patented ones. Its high scalability enables users to build versatile POS systems. The system is compatible with all types of EPSON POS printers (excluding the TM-C100) and displays. Moreover, its flexibility makes it easy to upgrade the future. The functionality and the user-friendliness is valued around the world.

The influence on the environment of radio wave radiation

- ❏ The Radio Frequency module that can be installed in this product radiates the same high frequency energy as some other high frequency devices but the level of the energy radiated from it is suppressed so that it is much lower than the electromagnetic energy radiated from radio equipment like cell phones.
- ❏ Under some situations and in certain environments, the use of this equipment is sometimes limited by the owner of the building or a representative with responsibility for the group. For example, it may be restricted in the following case:
  - Use in an environment where it may cause interference with other devices and services.
- ❏ If you do not understand the radio device usage policy in a specific group or environment, such as an airport, ask permission before turning on the power of this product.

The influence on the human body of radio wave radiation

The output power radiated from the Radio Frequency module that can be installed in this product is much lower than the radiation limit specified in the safety standard. However, it is best to avoid allowing this product to contact your body during usual operation. While using, be especially careful not to touch the cover of the antenna.

Note about interference

- ❏ The Radio Frequency module that can be installed in this product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
- ❏ If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult your dealer or an experienced radio/TV technician for help.
- ❏ Never disassemble or modify this product or the installed Radio Frequency module.
- ❏ Seiko Epson Corporation shall not be liable for interference to radio/TV resulting from changes or modifications to this product or the installed Radio Frequency module not expressly approved by Seiko Epson Corporation.

❑ Other radio equipment sometimes uses the same frequency band that this unit uses. To prevent radio wave interference with other radio equipment, pay attention to the following matters when you use this product:

- The Radio Frequency module that can be installed in this product uses the Industrial Scientific and Medical band (2.4 GHz), DS-SS modulation, and the interference distance is 40 m.
- Other equipment that uses the same frequency band used by the Radio Frequency module that can be installed in this product includes equipment for industry, science and medical treatment, microwave ovens, HomeRF, and radio and other broadcasting equipment (both ones that require a license and ones that do not require a license).

1. Confirm that radio and other broadcasting equipment are not used nearby before using this product.
2. When trouble occurs, for example, if the Radio Frequency module causes problems such as radio wave interference, consult your dealer.

Note about security

This section describes security concerns when using a wireless LAN by using the Radio Frequency module that can be installed in this product.

Security is important for the protection of the user's privacy

A wireless LAN has the advantage that information can be exchanged by using radio waves instead of a cable. However, radio waves are not confined to a cable and can be received in a fairly wide area and through obstacles such as walls, so if security is not used, the following problems may occur.

Communication data can be received by stealth.

A third person can receive private communication data by intercepting the radio waves intentionally. Such a person could receive items such as the following:

- Personal information, such a an ID and password or credit card number
- The contents of e-mail.
- Data which is communicated between the PC and printer.

Illegal access

A third person can access the network and cause damage such as the following:

- Personal information and secret information can be removed.
- Invalid information can be sent as if it were from a legitimate user of the network.
- Intercepted communication contents can be re-written and sent.
- Data and the system can be destroyed by an electronic virus.

This product, the wireless LAN card, and the access point have security mechanisms to counter these problems. If you use the security settings for this product, you can nearly eliminate these problems.

In some cases, the wireless LAN equipment is not set up before it is sold to the user. Therefore, to attempt to prevent security problems, always use all the security settings for the wireless LAN equipment according to the manual.

CAUTION	The security functions, however, cannot guarantee 100% security. Please understand this when you use this product. Seiko Epson Corporation suggests that the security setting is set by the judgment and the responsibility of user after understanding the possible problems resulting from using this product without the security settings.

When you cannot set the security by yourself, please ask your dealer.

For Safety

Key to Symbols

The symbols in this manual are identified by their level of importance, as defined below. Read the following carefully before handling the product.

WARNING	You must follow warnings carefully to avoid serious bodily injury.
CAUTION	Provides information that must be observed to prevent damage to the equipment or loss of data. • Possibility of sustaining physical injuries. • Possibility of causing physical damage. • Possibility of causing information loss.
CAUTION	Provides information that must be observed to avoid damage to your equipment or a malfunction.
NOTE	Provides important information and useful tips.

Warnings

WARNING

- **To avoid risk of electric shock, do not set up this product or handle cables during a thunderstorm**
- **Never insert or disconnect the power plug with wet hands.**
  Doing so may result in severe shock.
- **Handle the power cable with care.**
  Improper handling may lead to fire or electric shock.
  * Do not modify or attempt to repair the cable.
  * Do not place any heavy object on top of the cable.
  * Avoid excessive bending, twisting, and pulling.
  * Do not place the cable near heating equipment.
  * Check that the plug is clean before plugging it in.
  * Be sure to push the plug all the way in.
- **Be sure to use the specified power source.**
  Connection to an improper power source may cause fire or shock.
- **Do not place multiple loads on the power outlet.**
  Overloading the outlet may lead to fire.
- **Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise**.
  Continued use may lead to fire. Immediately unplug the equipment and contact your dealer or a Seiko Epson service center for advice.
- **Never attempt to repair this product yourself.**
  Improper repair work can be dangerous.
- **Never disassemble or modify this product.**
  Tampering with this product may result in injury or fire.
- **Do not allow foreign matter to fall into the equipment.**
  Penetration by foreign objects may lead to fire.
- **If water or other liquid spills into this equipment, do not continue to use it.**
  Continued use may lead to fire. Unplug the power cord immediately and contact your dealer or a Seiko Epson service center for advice.
- **If you open the DIP switch cover, be sure to close the cover and tighten the screw after adjusting the DIP switch.**
  Using this product with the cover open may cause fire or electric shock.
- **Do not use aerosol sprayers containing flammable gas inside or around this product.**
  Doing so may cause fire.

Cautions

CAUTION

- **Do not connect cables in ways other than those mentioned in this manual.**
  Different connections may cause equipment damage or fire.
- **Be sure to set this equipment on a firm, stable, horizontal surface.**
  The product may break or cause injury if it falls.
- **Do not use this product in locations subject to high humidity or dust levels.**
  Excessive humidity and dust may cause equipment damage or fire.
- **Do not place heavy objects on top of this product. Never stand or lean on this product.**
  Equipment may fall or collapse, causing breakage and possible injury.
- **To ensure safety, unplug this product before leaving it unused for an extended period.**

Restriction of Use

When this product is used for applications requiring high reliability/safety such as transportation devices related to aviation, rail, marine, automotive etc.; disaster prevention devices; various safety devices etc.; or functional/precision devices etc., you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care etc., please make your own judgment on this product's suitability after a full evaluation.

About this Manual

Aim of the Manual

This manual is aimed to provide all the necessary information for development engineers to develop, design, and install POS system, or to develop and design printer applications.

Manual Content

The manual is made up of the following sections:

Chapter 1 Product Overview

Chapter 2 Installation

Chapter 3 Utilities

Chapter 4 Programming Samples

Chapter 5 UB-R03 Specifications

Chapter 6 Exchange from the UB-R02

EMC Standards Applied

Product Name: UB-R03
Model Name: M239A

The following standards are applied only to the interface boards that are so labeled. (EMC is tested using the EPSON power supplies and TM series printers.)

Europe:	CE marking
North America:	EMI: FCC/ICES-003 Class A

WARNING

You are cautioned that changes or modifications not expressly approved by Seiko Epson Corporation could void your authority to operate the equipment.

FCC Compliance Statement For American Users

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

FOR Canadian Users

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numerique de la classe A est conforme a la norme NMB-003 du Canada.

RF Module

This equipment contains the following wireless module.

Manufacturer: SEIKO EPSON CORPORATION

Type: M238A

Product Name: WI FI BOARD

This device complies with Part 15 of the FCC Rules and RSS-210 of the IC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

USA

NOTICE

This device conforms to Part 15 of the FCC rules.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This device conforms to IC, Low Power License-Exempt Radio Communication Devices (RSS-210).

The information such as Certification No., Model Name, and Manufacturer Name are described on the surface of the module.

EUROPE

Hereby, SEIKO EPSON CORPORATION declares that this M239A is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC and 2004/108/EC.

France

In France, using the UB-R03 outdoors is prohibited.

Italy

In Italy, if used outside of own premises, general authorization is required.

CE Marking

DECLARATION of CONFORMITY

According to ISO/IEC Guide 22 and EN 45014

Manufacturer:	SEIKO EPSON CORPORATION
Address:	3-5, Owa 3-chome, Suwa-shi, Nagano-ken 392-8502 JAPAN
Representative:	EPSON FRANCE S.A.
Address:	Parc Technologique Europarc 60, Rue Auguste Perret 94043 Creteil Cedex France

Declares that the Product: Product Name: RF I/F BOARD
Model Name: M239A
Commercial Name: UB-R03

Conforms to the following Directives and Norms

R&TTE:	Directive 1999/5/EC
	EN 300 328
	EN 60950-1
	EN 301 489-1
	EN 301 489-17
EMC:	Directive 2004/108/EC
	EN 301 489-1
	EN 301 489-17

CE

The printers in which board is installed do not conform to the following;

Directive 90/384/EEC EN 45501

The UB-R03 can be used only in the countries listed below:

Australia, Austria, Belgium, Canada, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, NewZealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK, USA, and Hong Kong.

Contents

The influence on the environment of radio wave radiation....3
The influence on the human body of radio wave radiation....3
Note about interference....3

■ **Note about security....5**

Security is important for the protection of the user's privacy....5

■ **For Safety....7**

Key to Symbols....7
Warnings....8
Cautions....9

■ **Restriction of Use....9**

■ **About this Manual....10**

Aim of the Manual....10
Manual Content....10

■ **EMC Standards Applied....11**

FCC Compliance Statement For American Users....11
FOR Canadian Users....11

■ **RF Module....11**

USA....12
Canada....12

■ **EUROPE....12**

France....12
Italy....12

■ **CE Marking....13**

DECLARATION of CONFORMITY....13

■ **Contents....14**

Product Overview....17

■ **Features....17**

Supported OS....18
Supported browser....18
Supported Protocols....18

■ **Product Information....19**

Parts Name and Function....19
Usable Countries....20
Supported TM Printers....20
Communication Distance....20
Unpacking....20
Space Required for Installation....21
Environmental Specifications....21
Limitations....21

Installation 23

■ **Installation Precautions Cautions and Note 23**

■ **Connect the UB-R03 to the TM Printer 24**

■ **How to Set the UB-R03 ..... 26**

■ **Setting using the USB connection 26**

Procedure for setting the UB-R03 using the USB connection 26
The preparation of the computer and the acquisition of the information 27
Setting of the UB-R03 28
Confirming the operation 36

■ **Setting using the wireless LAN connection 37**

Procedure for setting the UB-R03 using the wireless LAN connection 37
Preparation of the computer 38
Printing a Dynamic Status Sheet 38
Connection from the setting computer 40
Setting of the UB-R03 40
Confirming the operation 44

■ **Initializing the UB-R03 ..... 45**

■ **Changing of the Setting 46**

Change using a Web browser 46
Change the setting using TMNet WinConfig V3 (USB connection) 50
Change the setting using TMNet WinConfig V3 (By network) 51

Utilities 53

■ **Setting the TCP/IP Protocol in Your Operating System 53**

Windows Vista 53
Windows XP 55
Windows 2000 56

■ **TMNet WebConfig 57**

Activating the TMNet WebConfig 57
General Information 58
TCP/IP Information 60
SNMP Information 61
Wireless Setting 62
TCP/IP Setting 64
SNMP Communication Setting 65
SNMP IP Trap 1 Setting 66
SNMP IP Trap 2 Setting 67
Administrator Setting 68
Password Setting 69
Reset 70

■ **Set the IP Address using PING 71**

Setting example 71

Programming Samples 73

■ **Method of Printing to the UB-R03 ..... 73**

■ **Direct Printing by PORT 9100 ..... 74**

For Windows Console 74
For Linux 75

■ **Monitoring of the ASB status 76**

■ **More than one connection demands 76**

UB-R03 Specifications 77

■ **Software Specifications 77**

Supported Protocols 77

■ **Network Parameter of the UB-R03 ..... 80**

Setting of the network parameter of the UB-R03 81
How to check the Mac Address 81

■ **System Bootup Time 82**

Exchange from the UB-R02 83

■ **Comparison of the UB-R02 and the UB-R03 ..... 83**

■ **Procedure for exchanging 84**

Confirm the setting of the wireless LAN interface (UB-R02) 85
Exchanging of the wireless LAN interface 86
Setting of the wireless LAN interface (UR-R03) 86
Confirm the operation 86

Product Overview

This chapter explains the product overview.

Features

The UB-R03 is installed in the TM-series printers as an interface board to provide Wireless Ethernet communications.

Wireless LAN

- IEEE802.11b compatible
- An infrastructure mode and an Ad-Hoc mode are supported.
- Equipped with WPA/WPA2-PSK, 64/128bit WEP
- Please prepare the access point (for the Infrastructure mode) or the computer for the wireless LAN (for Ad-Hoc mode) for your system.

Network Function

- IPv4 capable. Not IPv6 capable.
- Supports DHCP/APIPA.
- SNMP capable. The status of the printer can be acquired by using SNMP.

Setting

- The setting from the computer for wireless LAN is possible the same as the wireless LAN interface (UB-R02) as usual.
- The UB-R03 has the USB connector only for the network parameter setting. The network parameter can be set through the USB connector. It is used only for the parameter setting, so it cannot be used for printing or other uses.

> **CAUTION**
> - Exclusive utility software (TMNetWinConfig V3) is needed to set through the USB connector.
> - The USB connector can be used only for setting the network parameter. The USB connector cannot be used for other purposes, such as printing.

- You can check and set the parameter by using a Web browser.
- The setting utility TMNetWinConfig V3 is available. Please download it from the EPSON Web site and use it.

- When when you push the push button, the setting condition of the present network parameter is printed and you can check it.

Software

- The EPSON Advanced Printer Driver and the OPOS ADK are used for the UB-R03.

Supported OS

- Windows Vista
- Windows XP
- Windows 2000

Supported browser

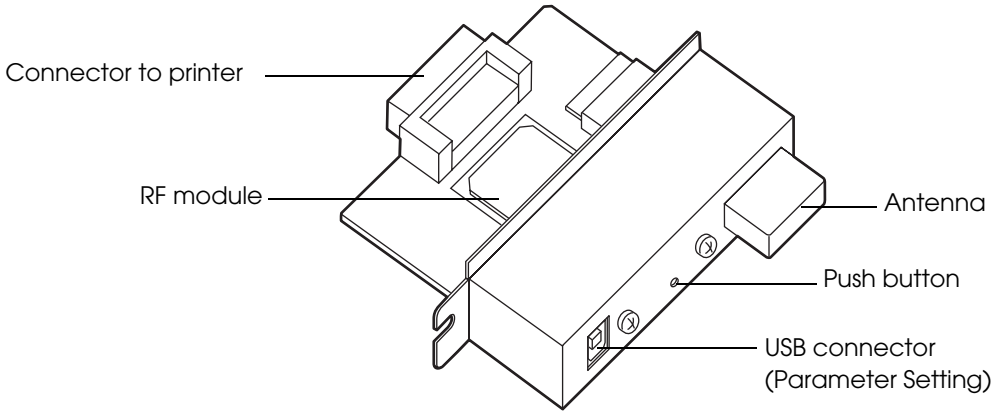
- Internet Explorer (Ver. 6.0 or later)
- Firefox (Ver. 2.0 or later)

Supported Protocols

Protocol	Application
IP, ARP, ICMP, UDP, TCP	Basic communications protocols for various functions.
LPR, TCP Socket Port	Protocol for printing.
DHCP, APIPA	Protocol for automatic settings of IP address, etc.
SNMP	Protocol for settings and watch.
HTTP	Protocol for using TMNet WebConfig.
TFTP	Protocol to update the firmware.

Product Information

Parts Name and Function



Push button

A push button is provided to perform the following functions.

- Status sheet printing
  Push and hold the push button for three seconds or more when the TM printer is ready for printing (paper is set and the power supply is turned on); the network parameter status is printed.
- Setting initialization
  Push and hold the push button and while turning on the power supply. Keep pushing the push button (about ten seconds) until the initialization start massage (Resetting to Factory Default) is printed. All settings are reset to the factory settings.

USB connector (Parameter Setting)

The UB-R03 has a USB connector to set the internal parameters.

- To be connected with a USB cable to the computer on which the dedicated utility (TMNet WinConfig V3) is installed to set the internal parameters.

CAUTION The USB connector can be used only for setting the network parameter. The USB connector cannot be used other purposes, such as printing.

Usable Countries

The Radio Frequency module that can be installed in the UB-R03 can be used in the following countries.

Country	Australia, Austria, Belgium, Germany, Luxembourg, Netherlands, Switzerland, France, Italy, Greece, Spain, Portugal, Denmark, Finland, Ireland, Sweden, UK, Czech, Estonia, Hungary, Lithuania, Latvia, Poland, Slovenia, Slovakia, New Zealand, Norway, USA, Canada, and Hong Kong.

Supported TM Printers

Any printer with an EPSON UIB interface can be used.

The UB-R03 cannot be used with the RP-U420.

For the following TM printers, check the printer firmware version. The UB-R03 can be used when any of the listed firmware versions or later one is used.

Printer	Firmware version
TM-L90	Ver. 1.08ESC/POS, 1.07ESC/POS-J, 1.07ESC/POS-M
TM-T90	Ver. 1.09ESC/POS, 1.08ESC/POS-J, 1.06ESC/POS-M
TM-J7000/J7100	Ver. 1.07ESC/POS
TM-J7500/J7600	Ver. 1.04ESC/POS
TM-T70	Ver. 1.03ESC/POS, 1.02ESC/POS-J, 1.01ESC/POS-J(80)
TM-T88IV	Ver. 10.03ESC/POS, 10.03ESC/POS(58)

Communication Distance

- The communication distance is 30 meters {98 feet}.
- The communication distance depends on the surrounding environment of the electric wave, any obstacles, the placing and so on. Make a thorough evaluation when setting up.

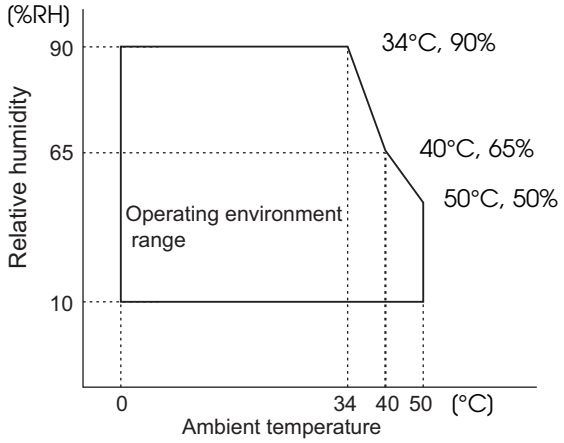
Unpacking

- UB-R03
- UB-R03 User's Manual

Space Required for Installation

The position of the UB-R03 is different for different printers. For example, when it is installed in the back of one model, it increases the depth of by printer by 30 mm(1.26"). Take this into consideration for your installation.

Environmental Specifications

Item		Specifications
Temperature	Operating Conditions	0 to 50°C {32 to 122°F}, 10 to 90% RH non-condensation (See the operating temperature and humidity range below.)
	Storage Conditions	-10 to 50°C {14 to 122°F}, 10 to 90% RH non-condensation
		

Limitations

The UB-R03 has following limitations.

Limitations for the TM Printer

- It cannot be used with the RP-U420.
- AC adapter Connection (Note about TM-U200,210)
  When combining and using the TM-U200 or U210 and the UB-R03, the PA, PB series AC adapter packed with the TM-U200 and U210 cannot be used. Use the PS-180.

Limitations for Transmission

- The transmission of the radio waves cannot be stopped. The only way to stop the transmission of radio waves is to turn the TM printer off.
- When printing a high volume of data such as graphics, the print speed is slower.

Limitation for Customer Display Use

When the UB-R03 is connected, the DM-D connector on the TM unit cannot be used.

Limitations Using USB Connector (Wireless Setting)

When the power supply is turned on under the following conditions, the wireless LAN function of the interface does not operate.

- The UB-R03 is connected the computer with a USB cable.
- The TM printer is off-line. (No paper or the cover open, etc.)

Unplug the USB cable or correct off-line condition at the TM printer to operate the wireless LAN function.

The USB connector (for wireless setting) can be used only for setting to the network parameter. It cannot be used other purposes, such as printing or setting the TM printer.

Restrictions on Using the Ad-Hoc Mode

Setting the Encryption Type

With the UB-R03, WPA/WPA2-PSK is not available in the Ad-Hoc mode.

Although using the WebConfig function allows the Encryption Type “WPA/WPA2-PSK” to be selected in the Ad-Hoc mode, this setting actually is ignored. (In fact, the setting is the same as “no encryption.”)

Dynamic Status Sheet

When using the UB-R03 in the Ad-Hoc mode, printing a dynamic status sheet is subject to the following restrictions:

- Even if there is no host computer to connect to, “Connect” appears as the Link Status.
- Between power-on and the time when the printer to connect is found, “0dBm” appears as the Signal Level. If the host computer connected to the TM printer discontinues communication, the value that had been obtained immediately before discontinuation of communication is held/appears.

Installation

This chapter describes the UB-R03 installation. The UB-R03 is an interface board on which is installed the Radio Frequency module for Epson TM printers. The Radio Frequency module is installed on the UB-R03 at the factory.

To set up the printer, install the UB-R03 in the Epson TM printer and initialize the UB-R03 to return it to its default setting. Set the PC to be able to communicate with the UB-R03. Then change the setting of the UB-R03 using the setting PC. The UB-R03 can be set by using the dedicated utility TMNet WinConfig.

Installation Precautions Cautions and Note

WARNING

- Before installing, disconnect the Power Unit from the TM Printer (as well as turning the power switch off).
  Even when the power switch is off, voltage is still present at some points on the circuit board. Changing components while the Power Unit is connected can cause damage to the UB-R03 and the printer.
- A grounded wrist strap should be worn during installation to avoid damage from static electricity.
- To avoid damage from static electricity when the unit is removed, place it on an static-safe surface such as conductive foam.
- Protect the unit from vibration and shock that could damage to the unit.
- Do not attempt to wire this product other than as described in this document. Improper wiring could cause damage, fire or explosion.
- Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.

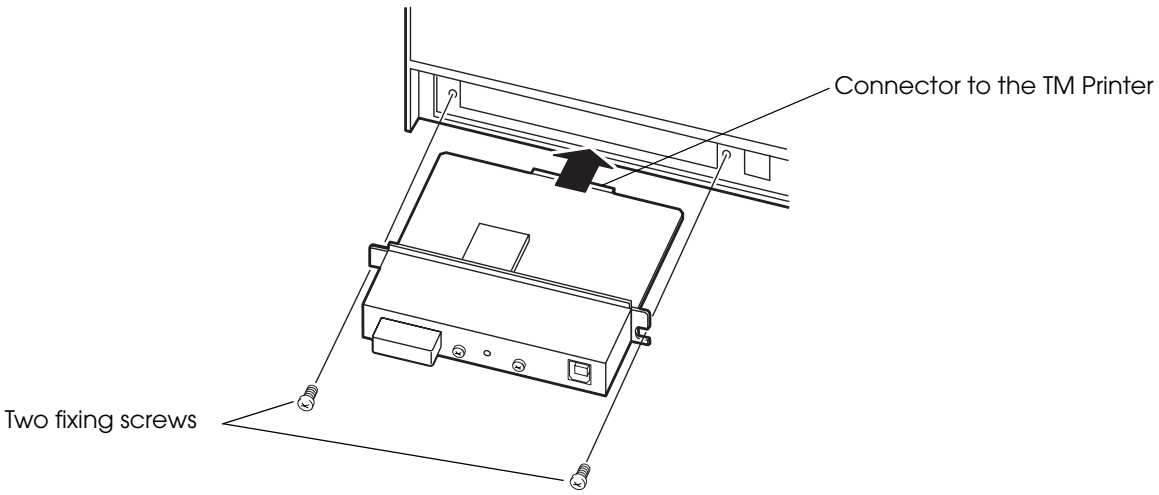
NOTE

Because the default IP address for all the wireless printers is the same, you should power on and configure only one printer at a time.

Connect the UB-R03 to the TM Printer

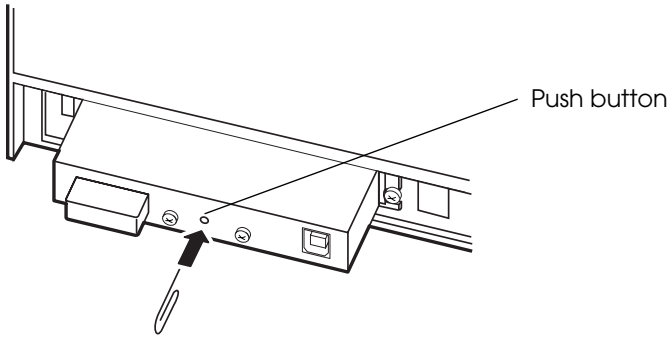
1. Confirm items in the pack. ("Unpacking" on page 20)

2. Remove the two screws of the universal interface connector of the TM Printer and connect the UB-R03, and fix it with two screws.



3. Set the DIP switch of the TM Printer. The interface of the TM printer must be selected as "parallel" with the appropriate settings. If a TM printer that can set the reset signal for pin 31 is used, set to "enable." Refer to the Technical Reference Guide for each TM printer for these settings for details. Also, set the memory switches according to your needs.

4 Power on the printer. Then, after waiting a little, hold down the push button on the interface card for more than 3 seconds. The printer prints the status sheet for the UB-R03. You can check all setting values necessary for the network connection.



5 Turn the power switch of the TM Printer on while pressing the Feed button. The printer prints current status of the printer on the paper.

6 Turn off the TM Printer.

How to Set the UB-R03

There are two ways to set the UB-R03.

- Setting with the USB connection
  Connect the computer to the USB connector (Parameter Setting) of the TM printer with the USB cable. This setting is possible without connecting to the network. Moreover, you can check the wireless LAN setting at any time, and if you make a mistake in the setting, you can correct it easily. This setting is recommended.
- Setting with the wireless LAN connection
  Prepare the setting computer for wireless LAN and set it with the wireless LAN. If a setting that cannot be communicated in the wireless LAN environment of the computer is set, the connection is cut while setting and you cannot check the setting. Also the wrong setting can prevent communication.

CAUTION	When you set up the access point at the same time, set the access point in advance and check that the UB-R03 operates correctly.

Setting using the USB connection

Setting the UB-R03 by connecting the computer to the USB connector (Parameter Setting) using the USB cable.

Procedure for setting the UB-R03 using the USB connection

The preparation of the computer and the acquisition of the information

Install the TMNet WinConfig V3 in the computer used for the setting, and download the set up information.

↓

Setting of the UB-R03

Connect the UB-R03 to the computer and set the wireless LAN setting.

↓

Confirming the operation

Confirm the operation of the UB-R03 using a Web browser.

The preparation of the computer and the acquisition of the information

Prepare the computer before setting up the UB-R03.

Needs

- TM printer : UB-R03 is installed
- Computer for setting : Windows Vista/XP/2000
- Computer for network : Setting computer can be used
- Utility for setting : TMNet WinConfig V3
- USB cable

Installing the TMNet WinConfig to the computer used for setting.

Download the TMNet WinConfig and install it to the computer.
(See "TMNet WinConfig User's Manual" for information on how to install the TMNet WinConfig.)

Acquisition of the setting information

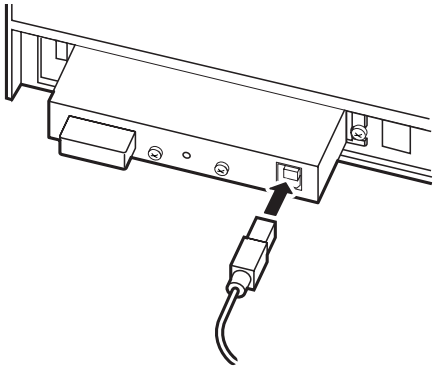
Acquire the following information from the network administrator.

Name	Explanation	Common device for network	Setting for each printer
SSID(ESSID)	This is set for each network of the SSID (ESSID) wireless LAN. Set the same setting as the access point.	√	
Security Setting	This is a security setting and a cipher key. Set the same setting as the access point for the infrastructure mode. Set the same setting as the computer for the Ad-Hoc mode.	√	
IP Address	Set the IP Address not to duplicate other devices in the network.		√
Subnet Mask		√	
Gateway Address			√

Setting of the UB-R03

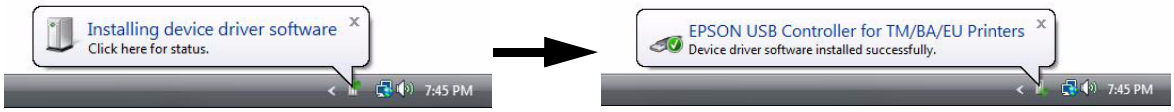
Set the UB-R03 according to the following steps.

1 Turn the power supply of the TM printer off, connect the computer to the USB connector (Parameter Setting) with the USB cable.



2 Set paper in the TM printer and turn on it.

When the first connecting to the setting computer, the “Installing device driver software” message is displayed, then the hardware setup is started automatically. Wait about one or two minutes until the setting is completed. (For Windows Vista)

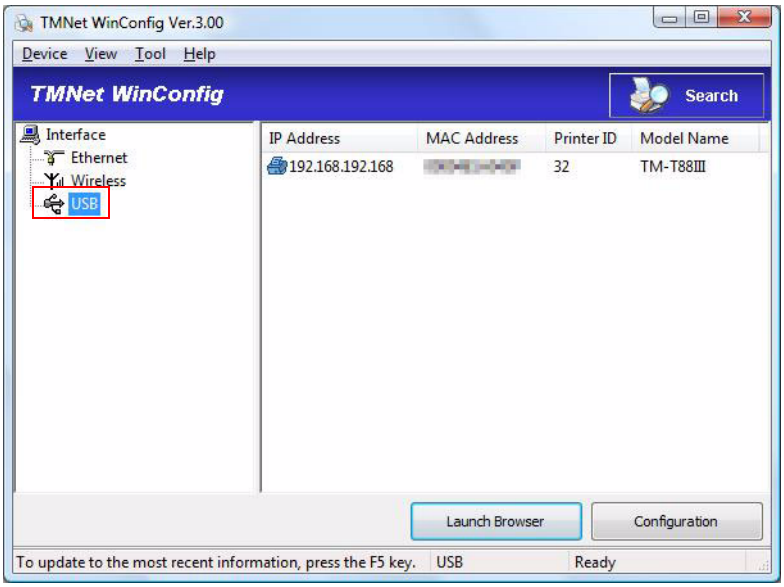


3 Boot the TMNet WinConfig V3 in the computer for setting.

Select [All Programs]-[EPSON TMNet WinConfig V3]-[TMNet WinConfig].

4 The "TMNet WinConfig Ver.3.00" window is displayed. Select (USB) in the Interface.

Confirm that the printer is displayed in the list.



5 Select the printer for setting and click the (Configuration) button.

When the printer is not displayed, click the [Search] button.

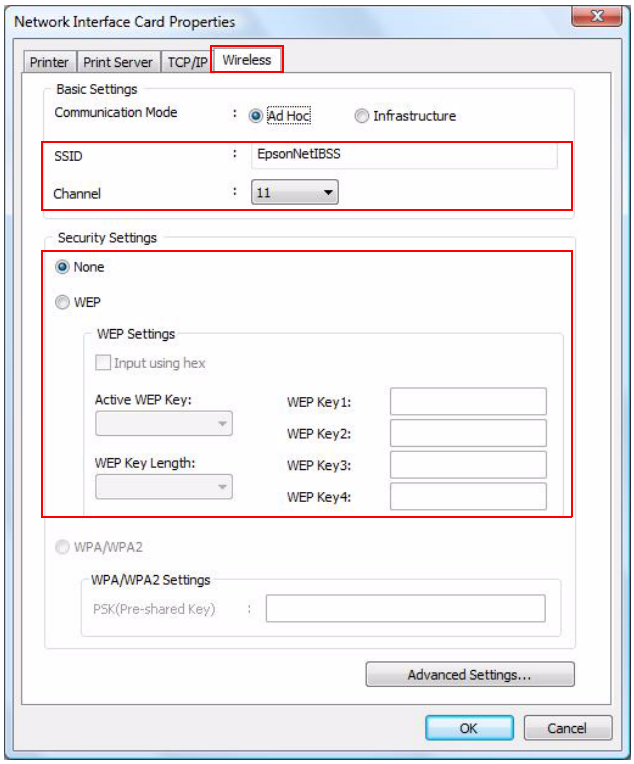
6 The "Network Interface Card Properties" dialog box is displayed.

7 Select the (Wireless) tab.

8 Set the wireless LAN.

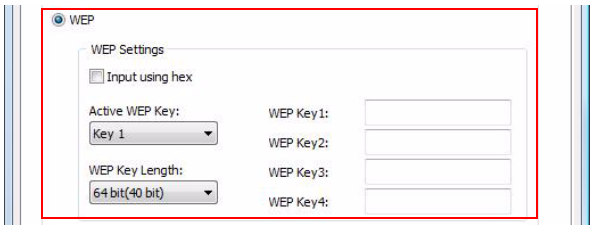
The setting items depend on the communication mode (Ad-Hoc/Infrastructure).

For "Ad Hoc" mode



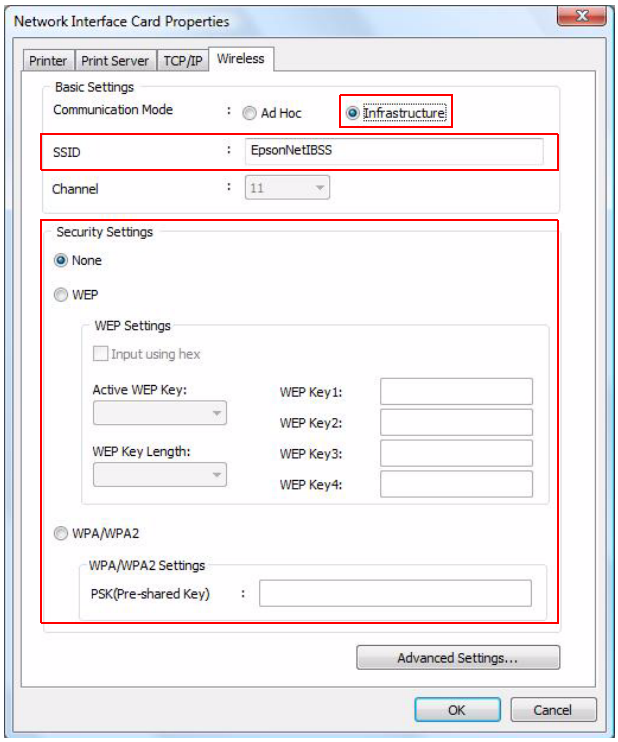
- Communication Mode : Select "Ad Hoc."(Default Setting: Ad Hoc)
- SSID : Set the same value as the computer. The maximum is 32 alphanumeric characters. (Default Setting: EpsonNetIBSS)
- Channel : Select the channel. (Default Setting: 11)
- Security Settings : Select "None" or "WEP." "WPA/WPA2" cannot be used. WEP is recommended for setting. (Default Setting: None)

For "WEP" Security Settings



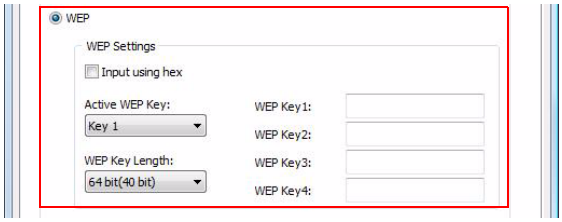
- Input using hex : Check the checkbox choosing the WEP Key to be input as a hexadecimal number.
- Active WEP Key : Select the WEP Key you are using. Key 1 to Key 4
- WEP Key Length : Select the length of WEP Key. 64 bit (40 bit)/128 bit (104 bit)
- WEP Key 1 to Key 4 : Input the WEP Key. The number of characters of WEP Key changes according to the setting.
  For 64 bit (40 bit), ASCII 5 characters
  For Hex 64 bit (40 bit), 10 places
  For 128 bit (104 bit), ASCII 13 characters
  For Hex 128 bit (104 bit), 26 places

For “Infrastructure”



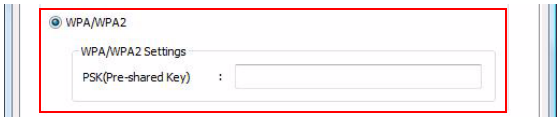
- Communication Mode : Select “Infrastructure.”
- SSID : Set the same value as the computer. The maximum is 32 alphanumeric characters.
- Security Settings : Select one of “None,” “WEP,” or “WPA/WPA2.”

For "WEP" Security Settings.



- Input using hex : Check the checkbox choosing the WEP Key to be input as a hexadecimal number.
- Active WEP Key : Select WEP Key you are using. Key 1 to Key 4
- WEP Key Length : Select the length of WEP Key. 64 bit (40 bit)/128 bit (104 bit)
- WEP Key 1 to Key 4 : Input the WEP Key. The number of characters of WEP Key depends on the setting.
  For 64 bit (40 bit), ASCII 5 characters
  For Hex 64 bit (40 bit), 10 places
  For 128 bit (104 bit), ASCII 13 characters
  For Hex 128 bit (104 bit), 26 places

For "WPA/WPA2" Security Settings



- PSK (Pre-shared Key) : Input the PSK (Pre-shared Key). ASCII 8 to 63 characters

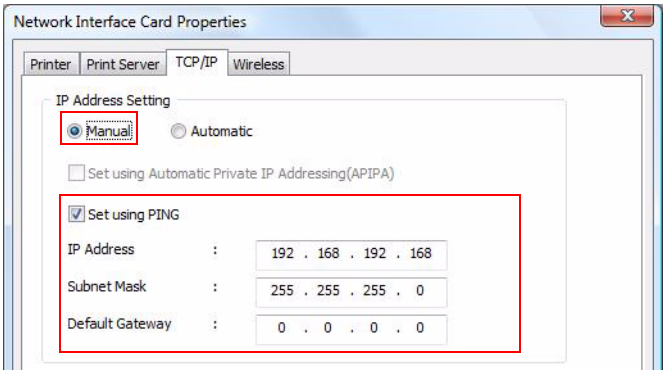
9 Select the (TCP/IP) tab.

10 TCP/IP settings such as the IP Address.

The setting items are different for Manual and Automatic. Record the IP Address to use for confirming the setting.
When you set the IP Address yourself, select “Manual.” When using the IP Address allocated from the router by DHCP, select “Automatic.”

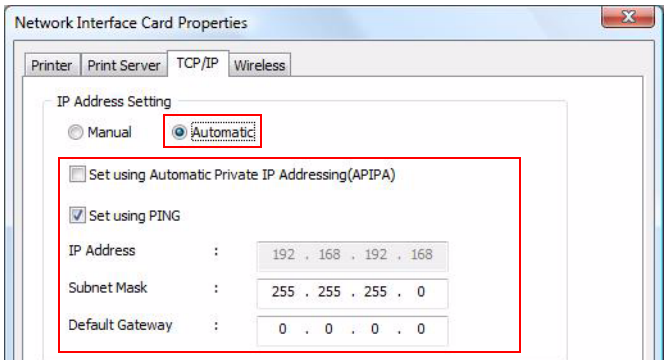
For setting the IP Address Manually

Set the IP Address, the Subnet Mask and the Default Gateway.


Network Interface Card Properties
Printer
Print Server
TCP/IP
Wireless
IP Address Setting
Manual
Automatic
Set using Automatic Private IP Addressing(APIPA)
Set using PING
IP Address : 192 . 168 . 192 . 168
Subnet Mask : 255 . 255 . 255 . 0
Default Gateway : 0 . 0 . 0 . 0

- Manual/Automatic : Select “Manual.”
- Set using PING : When setting the IP Address using the PING command from the network computer, check the [Set using PING] checkbox.
- IP Address : Set the IP Address.
- Subnet Mask : Set the Subnet Mask.
- Default Gateway : Set the Default Gateway.

For setting the IP Address Automatically

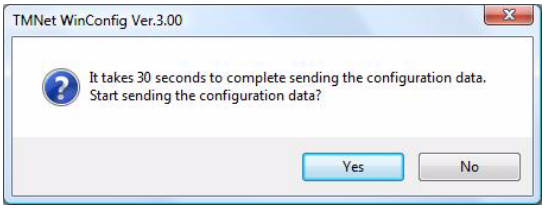

Network Interface Card Properties
Printer
Print Server
TCP/IP
Wireless
IP Address Setting
Manual
Automatic
Set using Automatic Private IP Addressing(APIPA)
Set using PING
IP Address : 192 . 168 . 192 . 168
Subnet Mask : 255 . 255 . 255 . 0
Default Gateway : 0 . 0 . 0 . 0

- Manual/Automatic : Select “Automatic.” Acquire the IP Address, the Subnet Mask and the Default Gateway from the DHCP server.
  Even if you set the Subnet Mask and the Default Gateway, the value acquired from the DHCP is set.

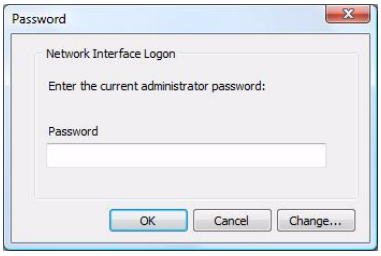
- Set using Automatic Private IP Addressing(APIPA)
  : If the value cannot be acquired from the DHCP server, the IP Address is set automatically by checking the Set using Automatic Private IP Addressing (APIPA) check box. The Subnet Mask and the Default Gateway is set the setting value.
- Set using PING : When setting the IP Address using the PING command from the computer of the network, check the [Set using PING] checkbox.
- Subnet Mask : Set the Subnet Mask.
- Default Gateway : Set the Default Gateway.

11 After setting the TCP/IP, click the (OK) button.

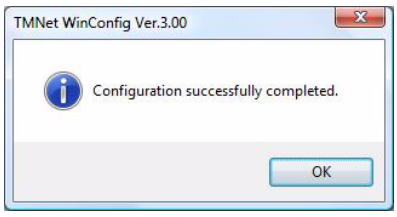
12 The confirmation dialog box is displayed. Click the (Yes) button.


TMNet WinConfig Ver.3.00
It takes 30 seconds to complete sending the configuration data.
Start sending the configuration data?
Yes
No

13 The "Password" dialog box is displayed. Click the (OK) button.



14 The contents of the setting are transmitted to the UB-R03. It takes about 30 seconds to display the completion window. Click the (OK) button.



15 Confirm the setting on each window of the TMNet WinConfig V3.

16 When the setting is completed, remove the USB cable.

Confirming the operation

Confirm that the printer equipped with the UB-R03 wireless LAN interface is connecting to the network. There are three confirmation methods.

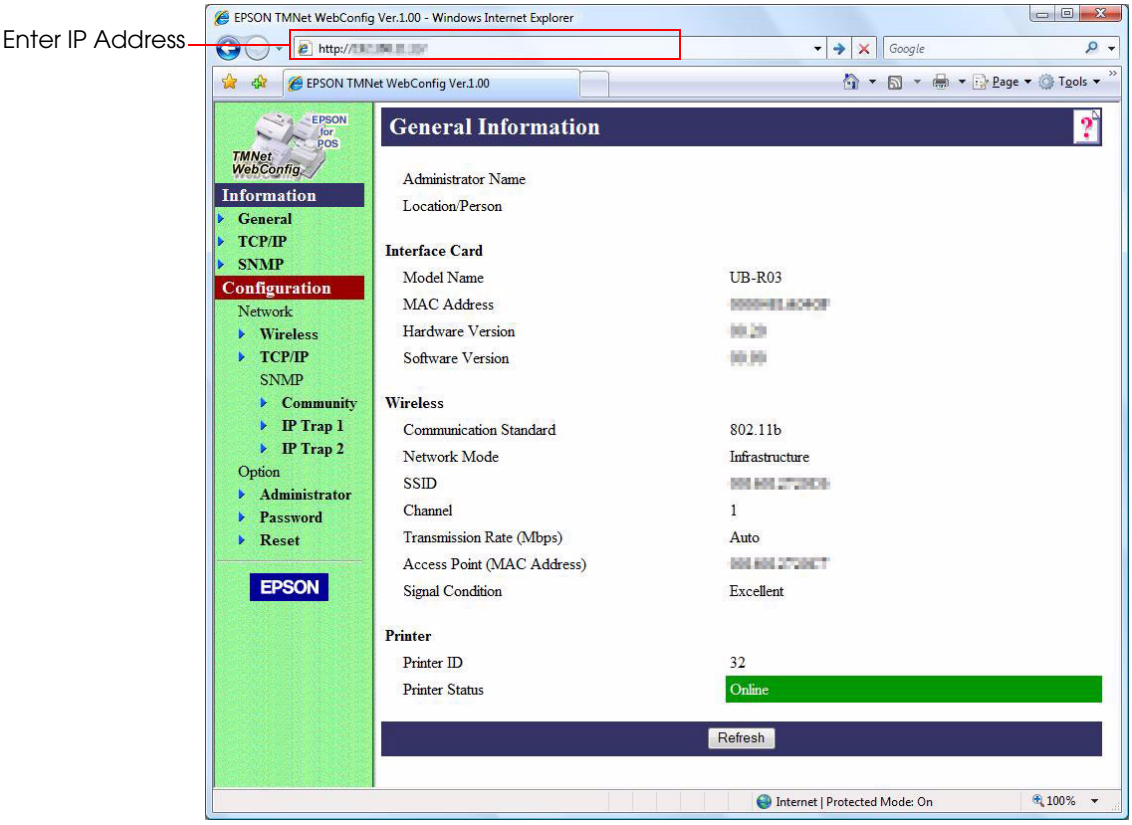
- Confirm using a Web browser.
- Conform using TMNet WinConfig V3.
- Conform using the PING command from the command prompt.

This section describes how to confirm using a the Web browser.

1 Confirm that the network is running; then boot the computer of the network.

2 Boot the Web browser and enter the IP Address for the UB-R03 in the address bar. The "TMNet WebConfig" window is displayed.

Address: http://(IP Address of the UB-R03)/



3 If the "TMNet WebConfig" window is not displayed, connect the computer for setting to the USB connector (Parameter Setting) with the USB cable, then confirm the setting again.

Setting using the wireless LAN connection

Prepare the setting computer for the wireless LAN and set it using the wireless LAN.

Procedure for setting the UB-R03 using the wireless LAN connection

The preparation of the computer

Install the TMNet WinConfig V3 in the computer used for the setting, and download the setup information.

Printing a Dynamic Status Sheet

Print the Dynamic Status Sheet and conform the setting of the UB-R03.

Connection from the setting computer

Connect using the Ad-Hoc mode.

Setting of the UB-R03

Setting of the UB-R03.

Confirming the operation

Confirm the operation of the UB-R03 using a Web browser.

Preparation of the computer

Prepare the computer before setting up the UB-R03.

Needs

- TM Printer : The UB-R03 installed
- Computer for setting : Windows Vista/XP/2000
  Computer equipped with wireless LAN function
- Computer for network : Setting computer can be used
- Utility for setting : TMNet WinConfig V3

Installing the TMNetWinConfig in the computer used for setting

Download the TMNetWinConfig and install it in the computer.
(See “TMNetWinConfig User's Manual” for information on how to install the TMNetWinConfig.)

Acquisition of the setting information

Acquire the following information from the network administrator. (For details of the setting information, refer to"Acquisition of the setting information" on page 27.)

Printing a Dynamic Status Sheet

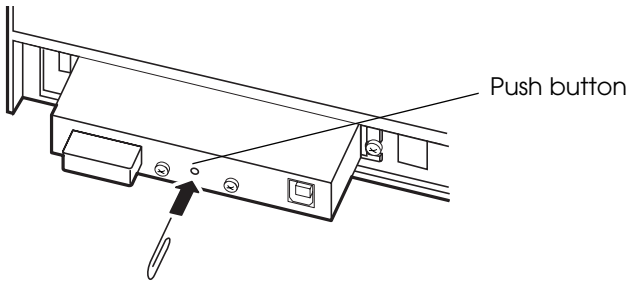
Print a Dynamic Status Sheet to confirm the setting of the UB-R03.

When the printer is connected to the setting computer directly, the network mode should be the Ad-Hoc mode.

If the status sheet says “Infrastructure,” initialize the setting of the UB-R03. (Refer to "Initializing the UB-R03" on page 45)

Printing a Dynamic Status Sheet

Power on the printer. Then, after waiting a little, hold down the push button on the interface card for more than 3 seconds. The printer prints the status sheet for the UB-R03. You can check all setting values necessary for the network connection.



An example of a Dynamic Status Sheet

```
*** Dynamic Status Sheet ***
802.11b Interface
MAC Address                 :xx.xx.xx.xx.xx.xx
Hard Version                :xx.xx
Soft Version                :xx.xx
WLAN pri F/W                :xx.xx.xx.xx.xx
WLAN STA F/W                :x.xx
Allowed Channel             :1-11

Wireless Status
SSID                        :EpsonNetIBSS
Network Mode                :Ad-hoc
Link Status                 :Connect
Access point                :xx.xx.xx.xx.xx.xx
Channel                     :11
Transmission Rate           :Auto
Signal Level                :-41dbm
Noise Level                 :N/A
RTS Threshold               :2347
Fragment Threshold          :2346
AP density                  :N/A
Authentication              :Open System
Encryption                  :Disable
Encryption Key              :N/A
Socket Timeout              :300
Disconnect Timeout          :5

TCP/IP Settings
IP Address                  :192.168.192.168
Subnet Mask                 :255.255.255.0
Default Gateway             :0.0.0.0
DHCP                        :Disable
APIPA                       :Disable
PING                        :Enable

SNMP Settings
Community Name 1            :public
Community Name 2            :

************************************
```

Necessary item for the network setting

Connection from the setting computer

Connect the computer for setting to the TM printer by the wireless LAN. The setting of the wireless LAN of the setting computer is set for the Dynamic Status Sheet.

> **NOTE** As for the setting method of the setting computer, refer to the manual of the computer used.

- Network Mode (Ad-Hoc)
- SSID (Ex: EpsonNetIBSS)
- IP Address (Ex: 192.168.192.2)
  (Don't set the same address as the IP Address of the printer to the setting computer.
  Example: If the IP Address is 192.168.192.168, the IP Address of the setting computer should be set to another number, such as 192.168.192.2. The same address (192.168.192.168) cannot be used.)
- Channel (Ex: 11 ch)

> **CAUTION** When you set up a TM printer equipped with more than one wireless LAN interfaces, turn on only one printer. If more than one printer is turned on at the same time, the TM printer cannot be set up.

At this stage, the TM printer can communicate with the setting computer.

Setting of the UB-R03

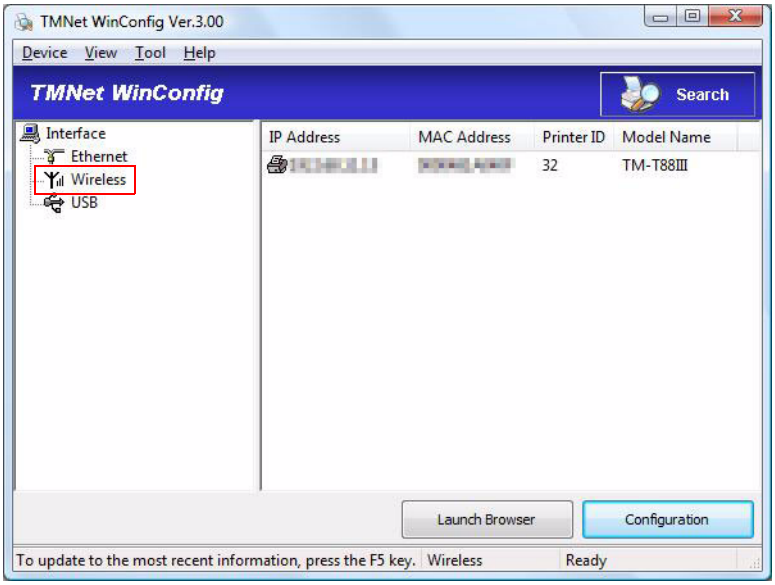
Set up the UB-R03 according to the following steps.

1 Boot the TMNet WinConfig V3 of the setting computer.

Select [All Programs]-[EPSON TMNet WinConfig V3]-[TMNet WinConfig].

2 The "TMNet WinConfig Ver.3.00" window is displayed. Select "Wireless" in "Interface" and confirm that the printer is displayed in the list.

If the printer is not displayed, click the [search] button. If the printer is still not displayed, the wireless LAN connection is not established. Confirm the setting of the setting computer again.



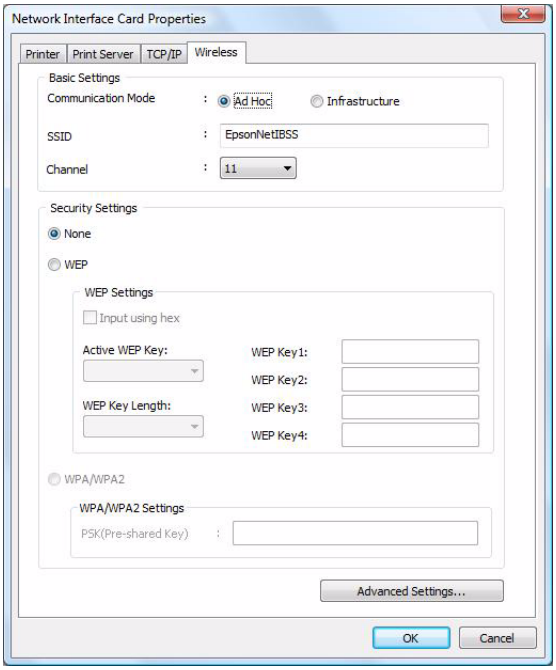
3 Select the printer for setting and click the (Configuration) button.

4 The "Network Interface Card Properties" dialog box is displayed.

5 Select the (Wireless) tab.

6 Set the wireless.

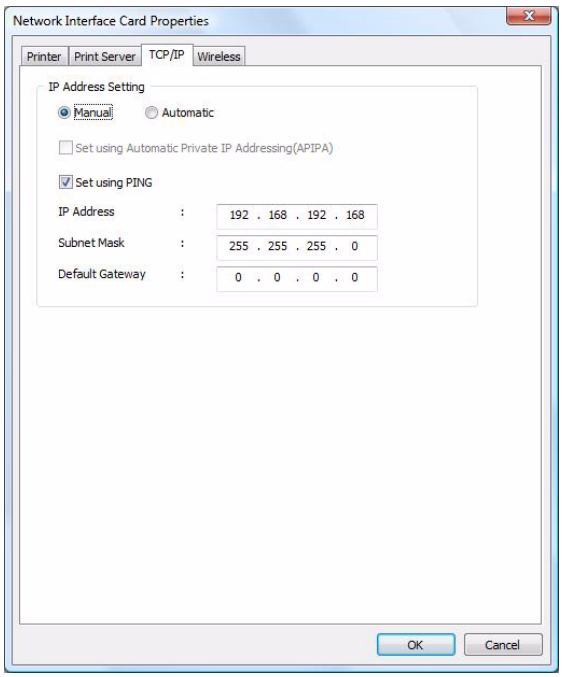
(As for details of the setting, refer to "Set the wireless LAN." on page 30)



7 Select the (TCP/IP) tab.

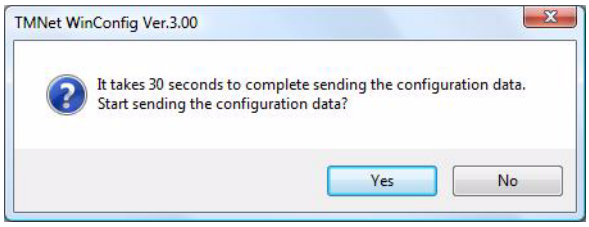
8 Set the IP Address.

(As for details of the setting, refer to "TCP/IP settings such as the IP Address." on page 34.)

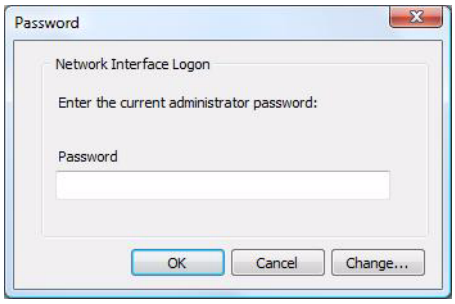


9 After setting, click the (OK) button.

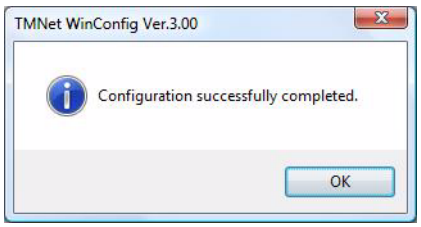
10 The confirmation dialog box is displayed. Click the (Yes) button.


TMNet WinConfig Ver.3.00
It takes 30 seconds to complete sending the configuration data.
Start sending the configuration data?
Yes
No

11 The "Password" dialog box is displayed. Click the (OK) button.



12 The setting content is sent to the UB-R03. After a while, the completion dialog box is displayed. Click the (OK) button.



At this stage, the wireless LAN of the UB-R03 is changed. The connection with the setting computer is cut according to the setting item and it is not displayed in the "TMNet WinConfig V3" window.

Confirming the operation

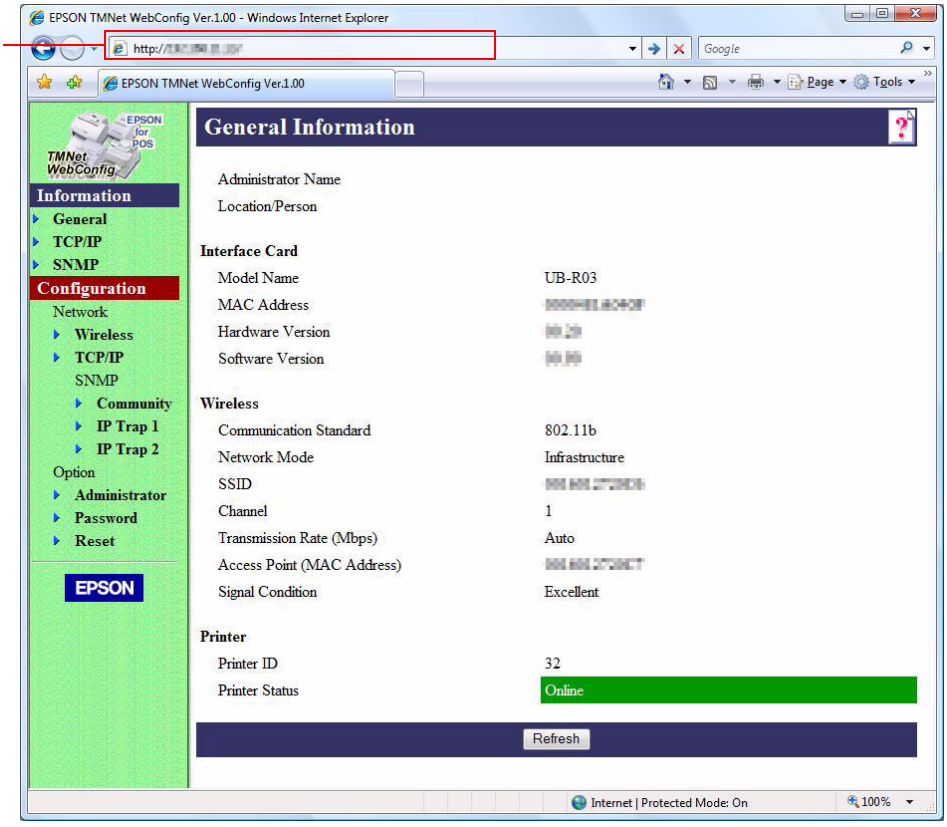
Confirm that the printer equipped with the UB-R03 wireless LAN interface is connected to the network. There are three confirmation methods.

- Confirm with a Web browser.
- Conform with TMNet WinConfig V3.
- Conform with the PING command from the command prompt.

1 Confirm that the network has been running, and boot the netword computer.

2 Boot the Web browser and enter the IP Address for the UB-R03 on the address bar. The "TMNet WebConfig" window is displayed.
Address: http://(IP Address of the UB-R03)/

Enter IP Address



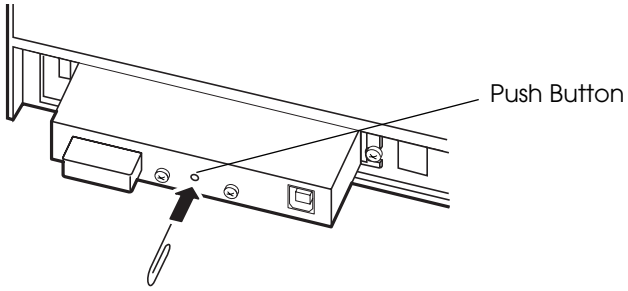
NOTE

If the "TMNet WebConfig" window is not displayed, print the Dynamic Status Sheet and confirm the setting. When it is not possible to set it, initialize the UB-R03. Then perform setting according the information from "Printing a Dynamic Status Sheet" on page 38.

Initializing the UB-R03

The UB-R03 setting can be reset to the default using the following method.

1. Set a roll paper for the TM printer to print.
2. Turn off the TM printer.
3. While holding down the Push button, turn the TM printer on.
   Push the Push Button using an extended paper clip or a pen point.



4. Wait about 10 seconds without letting the Push button up. A receipt as shown below is printed.

```
Resetting to Factory Default!
Please Wait...
WARNING: DO NOT
TURN OFF POWER
```

CAUTION Do not turn the printer off until the initialization is completed.

5. After about 20 to 25 seconds, a message notifying the completion of initialization is printed.

```
Reset to Factory Default Finished!
```

6. After the completion message, a Dynamic Status Sheet is printed.

Changing of the Setting

There are three methods for changing the setting of the UB-R03 connected with the network.

- Change the setting with a Web browser.
  Settings can be changed by a computer on the same network. If you are changing many setting items, change them another way.
- Change the setting using TMNet WinConfig V3 (USB connection).
  This method is similar to the initial setting procedure. It is suited for setting with other networks because the connection with the UB-R03 is not cut.
- Change the setting using TMNet WinConfig V3 (By network).
  It is suited for changing the setting in the same network.

Change using a Web browser

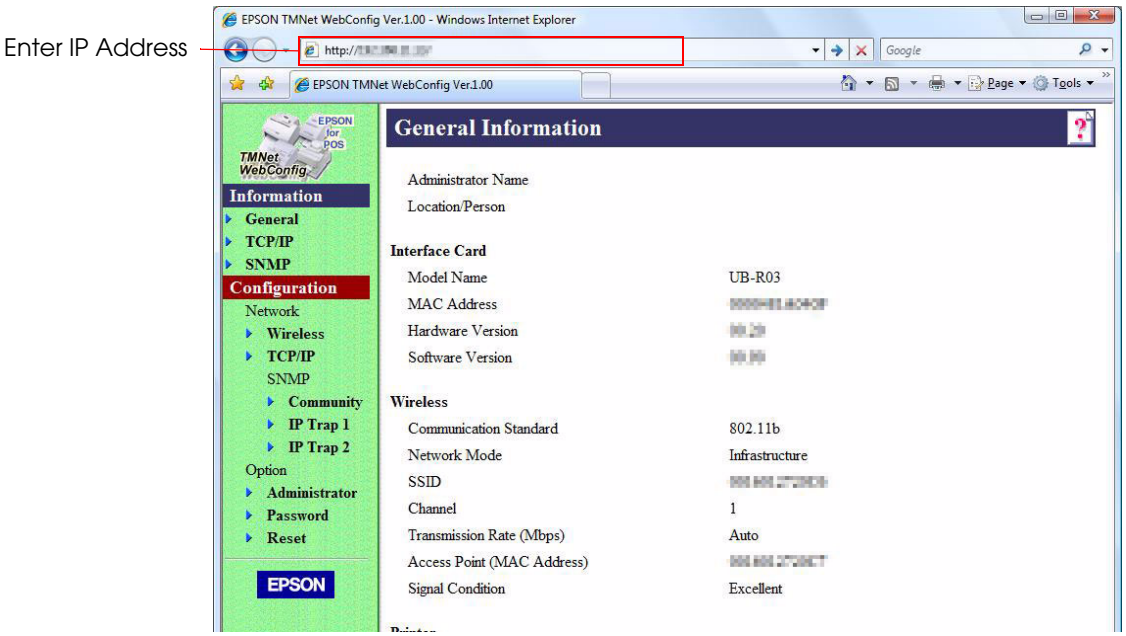
Change the setting of the UB-R03 using a Web browser. It is suited for some changes in the same network. After setting of the UB-R03, the TM printer should be reset. If the UB-R03 is set to another network, the connection will be cut.

Change method

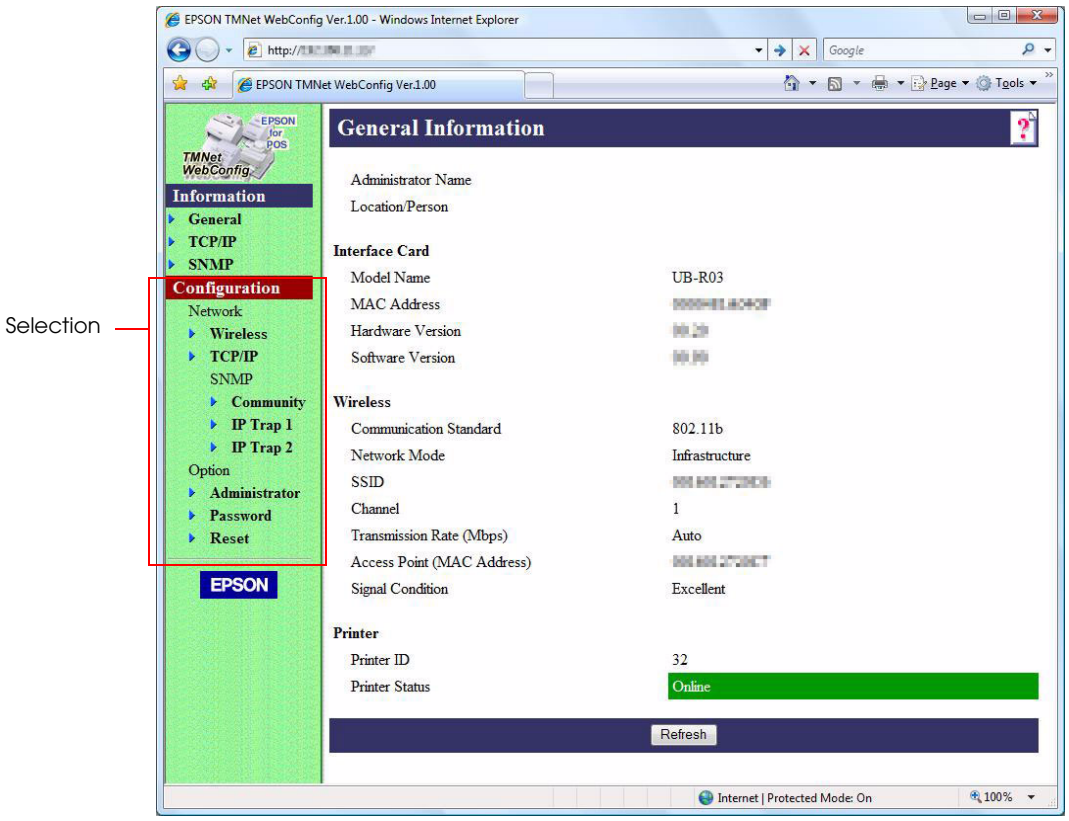
1 Boot the computer of the network.

2 Boot the Web browser and enter the IP Address set for the UB-R03 in the address bar. The "TMNet WebConfig" window is displayed.

Address: http://(IP Address of the UB-R03)/



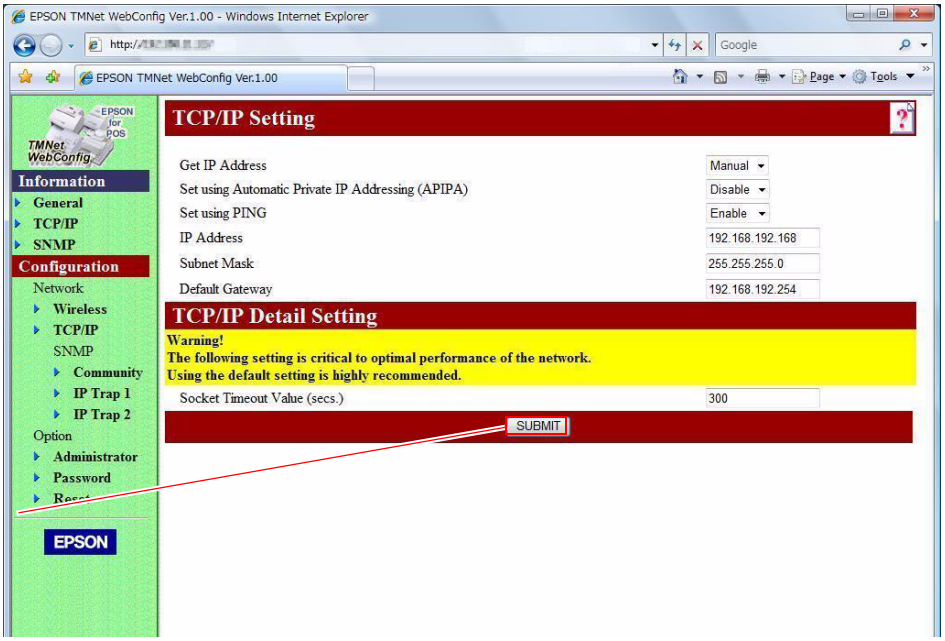
3 Select the item in the configuration and change the setting.



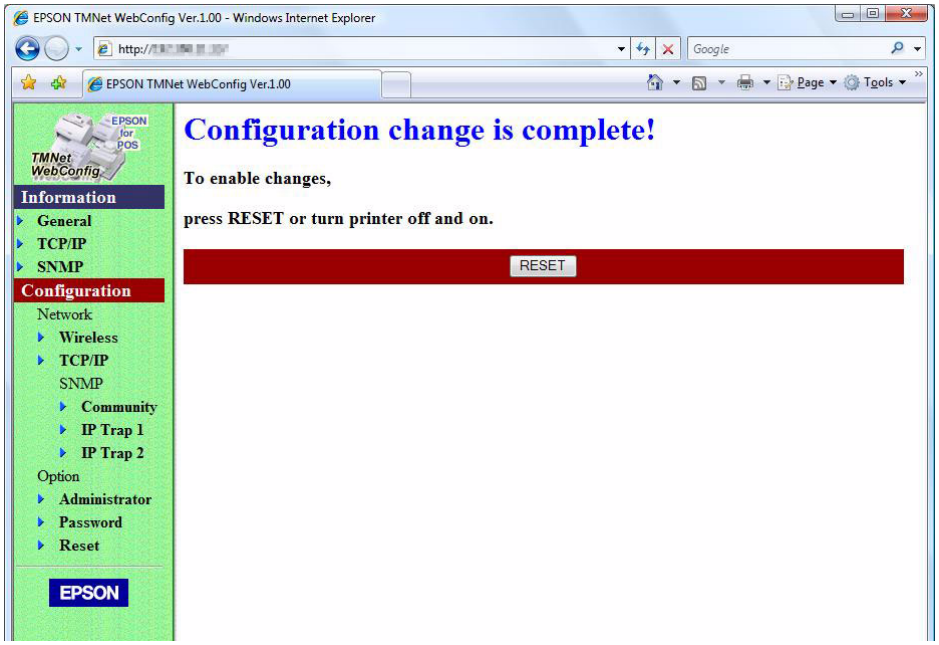
4 When the setting is completed, click the (SUBMIT) button.

The set content should be reflected in the UB-R03 when you click the [SUBMIT] button of each "TMNet WebConfig" window. If the window is switched without clicking the [SUBMIT] button, the input contents are cleared.

(SUBMIT) button



5 When the setting is completed, the message is displayed. Turn off the TM printer and turn on it again.



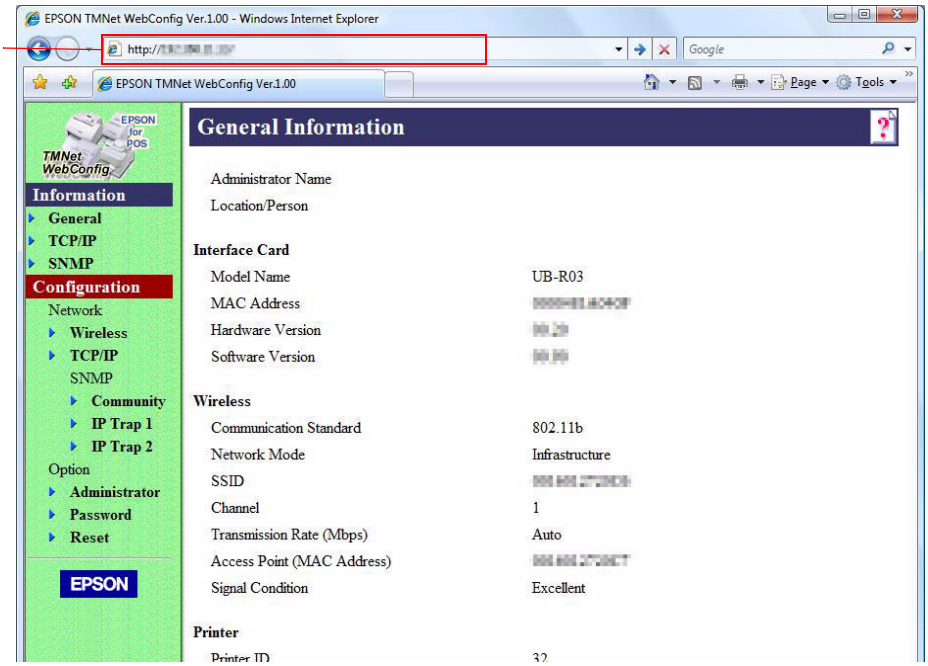
Confirm after changing

After changing of the setting, boot the Web browser of the computer on the network and enter the IP Address of the UB-R03 in the address bar.

Confirm that the "TMNet WebConfig" window is displayed.

Address: http://(IP Address of the UB-R03)/

Enter IP Address



Change the setting using TMNet WinConfig V3 (USB connection)

Connect the UB-R03 to the setting computer with the USB connection, and change the setting from TMNet WinConfig V3.

This method is similar to the initial setting procedure. It is suited for setting with other networks because the connection with the UB-R03 is not cut.

Changing method

For the details of the changing method, refer to "Setting using the USB connection" on page 26.

Confirm after changing

After changing of the setting, boot the Web browser of the computer on the network and enter the IP Address of the UB-R03 in the address bar.

For the details of the confirm, refer to "Confirm after changing" on page 49.

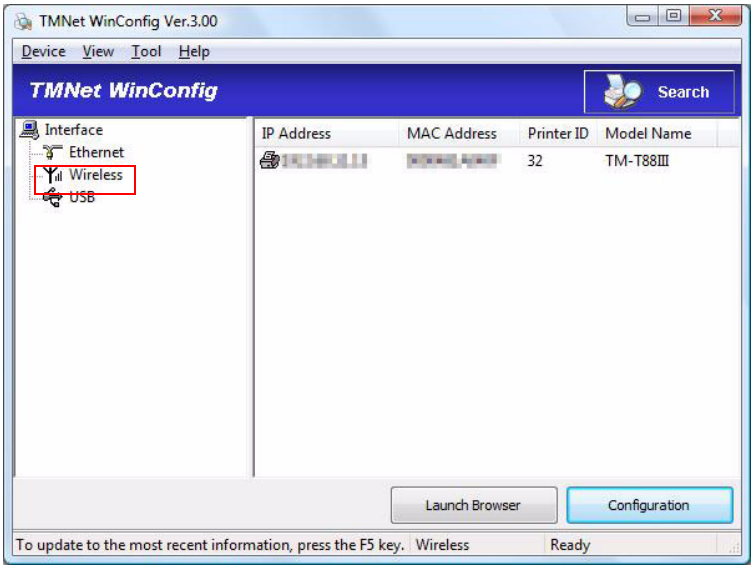
Change the setting using TMNet WinConfig V3 (By network)

It is suited for changing the setting in the same network.

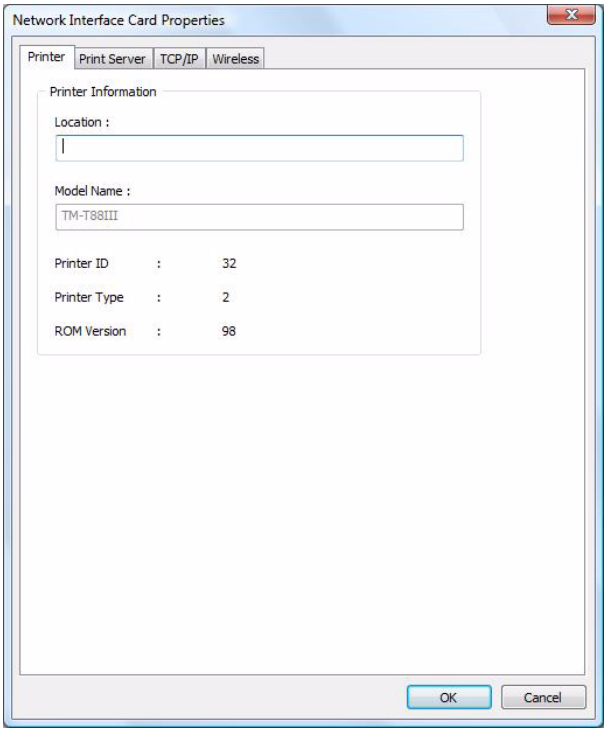
Changing method

1 Boot the computer of the network.

2 Boot the TMNet WinConfig V3. Select "Wireless" and then select the printer to change the setting.



3 Click the (Configuration) button to display the "Network Interface Card Properties" dialog box.



4 Change the setting. After setting, click the (OK) button.

Changing is completed.

Confirm after changing

After changing of the setting, boot the Web browser of the computer on the network and enter the IP Address of the UB-R03 in the address bar.

For the details of the confirming, refer to "Confirm after changing" on page 49.

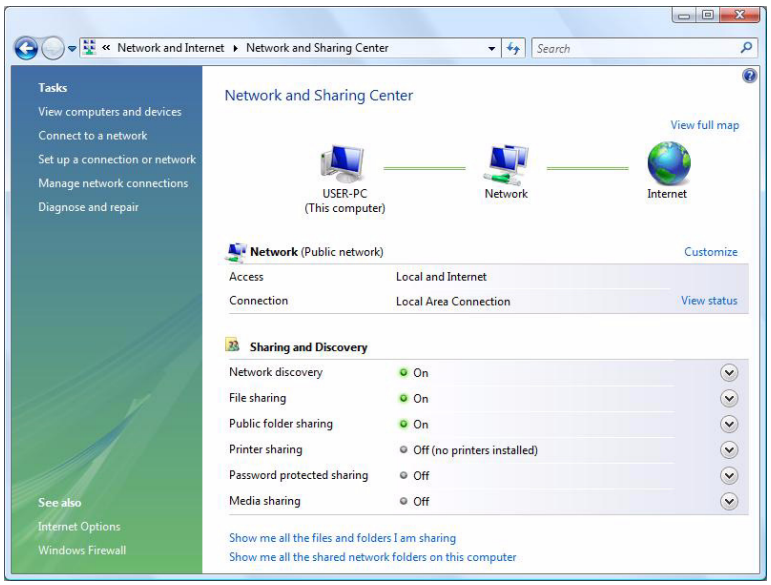
Utilities

Setting the TCP/IP Protocol in Your Operating System

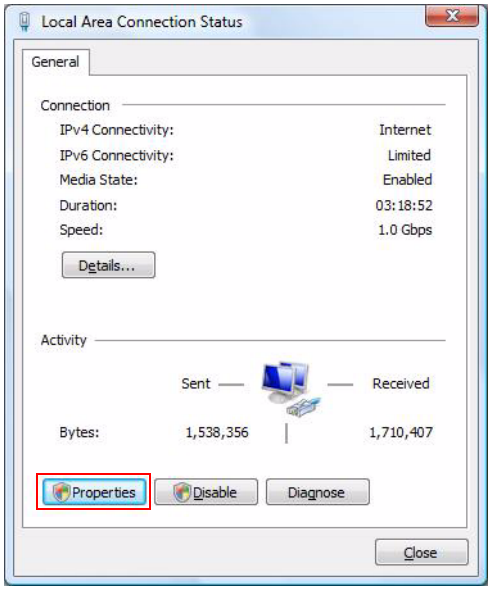
To set the IP address, you need to install the TCP/IP protocol in your operating system. How to set the TCP/IP protocol is explained for Windows Vista/XP/2000.

Windows Vista

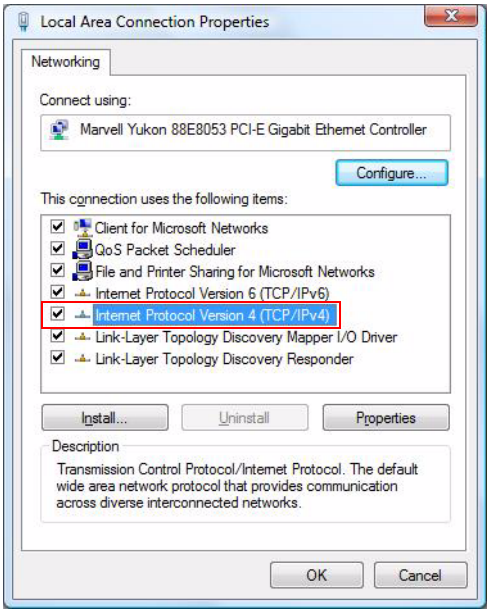
1 Click the (View status) icon in the Control Panel.



2 The "Local Area Connection Status" dialog is displayed.
Click the (Properties) button.



3 The "Local Area Connection Properties" dialog is displayed.
Check whether the (Internet Protocol Version 4 (TCP/IPv4)) check box is checked. If not, click the check box.

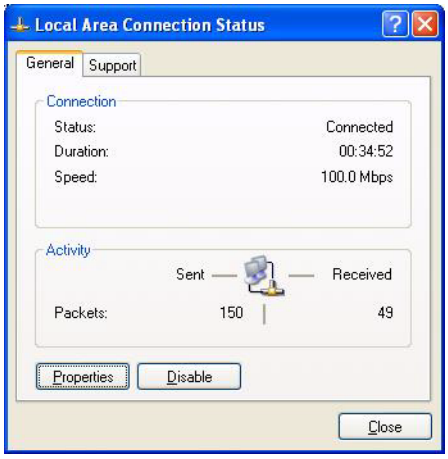


NOTE After the TCP/IP is installed, restart your computer and move on to the Installing TMNetWinConfig section.

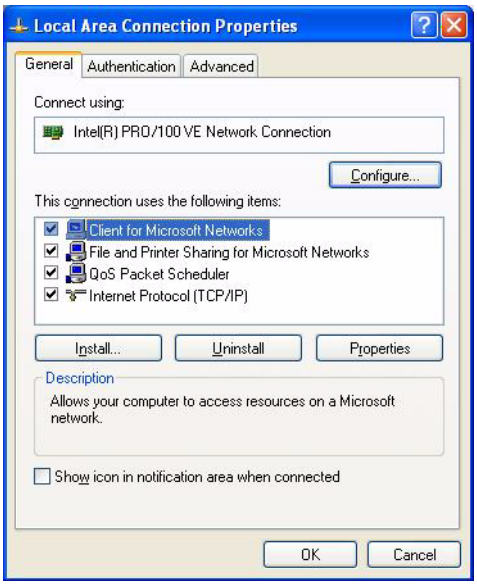
Windows XP

1 Click the (Network and Internet Connections) icon in the Control Panel; then click (Network Connections).

2 Double-click the (Local Area Connection) icon. The "Local Area Connection Status" dialog is displayed.



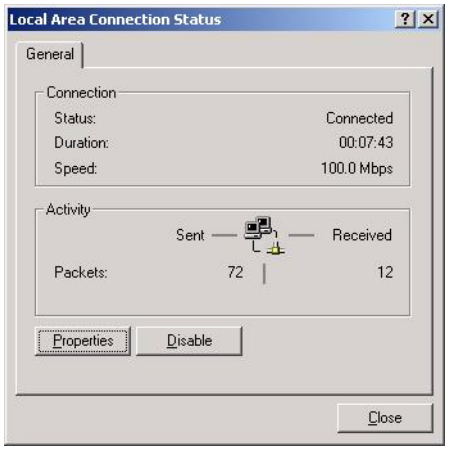
3 Click (Properties) and check whether the (Internet Protocol (TCP/IP)) check box is checked. If not, click the check box.



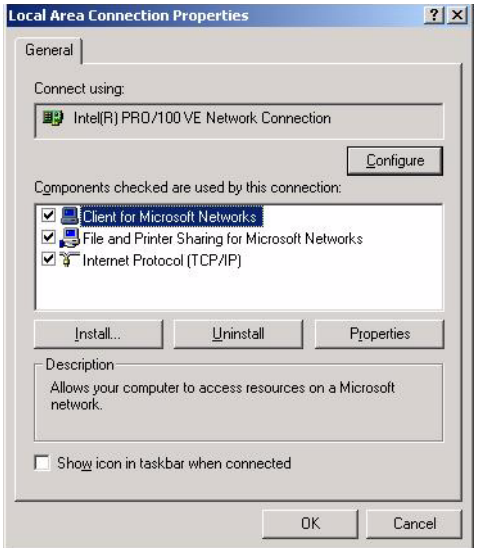
NOTE After the TCP/IP is installed, restart your computer and move on to the Installing TMNetWinConfig section.

Windows 2000

1 Double-click the (Network and Dial Set Up) icon in the Control Panel; then click Local Area Connection Status.



2 Click (Properties) button and check whether the (Internet Protocol (TCP/IP)) check box is checked. If not, click the check box.



NOTE

After the TCP/IP is installed, restart your computer and move on to the Installing TMNetWinConfig section.

TMNet WebConfig

TMNet WebConfig is a utility that allows you to make settings for the UB-R03 using a Web browser.
(The screenshots used in this chapter were captured using Internet Explorer. If you are using another browser, the screenshots may differ from those of your browser, however, there is no difference in the setting items and procedures themselves.)

NOTE

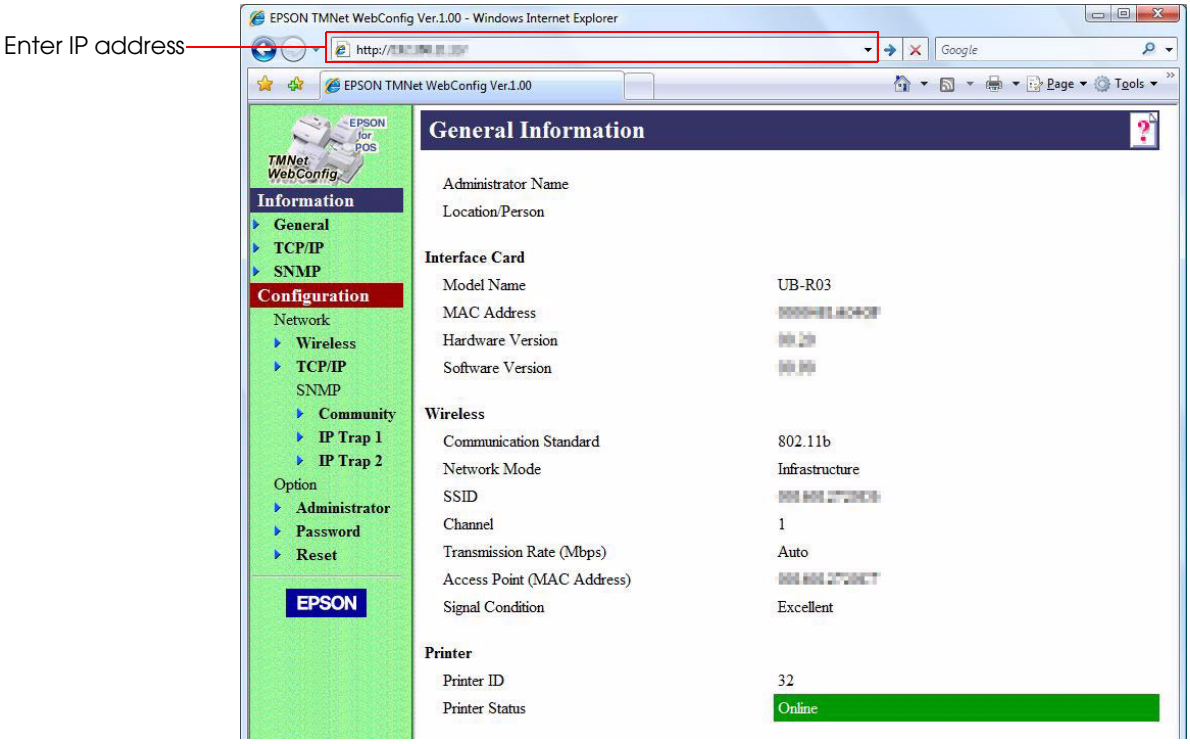
Supported browser
- Internet Explorer (Ver. 6.0 or later)
- Fire Fox (Ver. 2.0 or later)

Activating the TMNet WebConfig

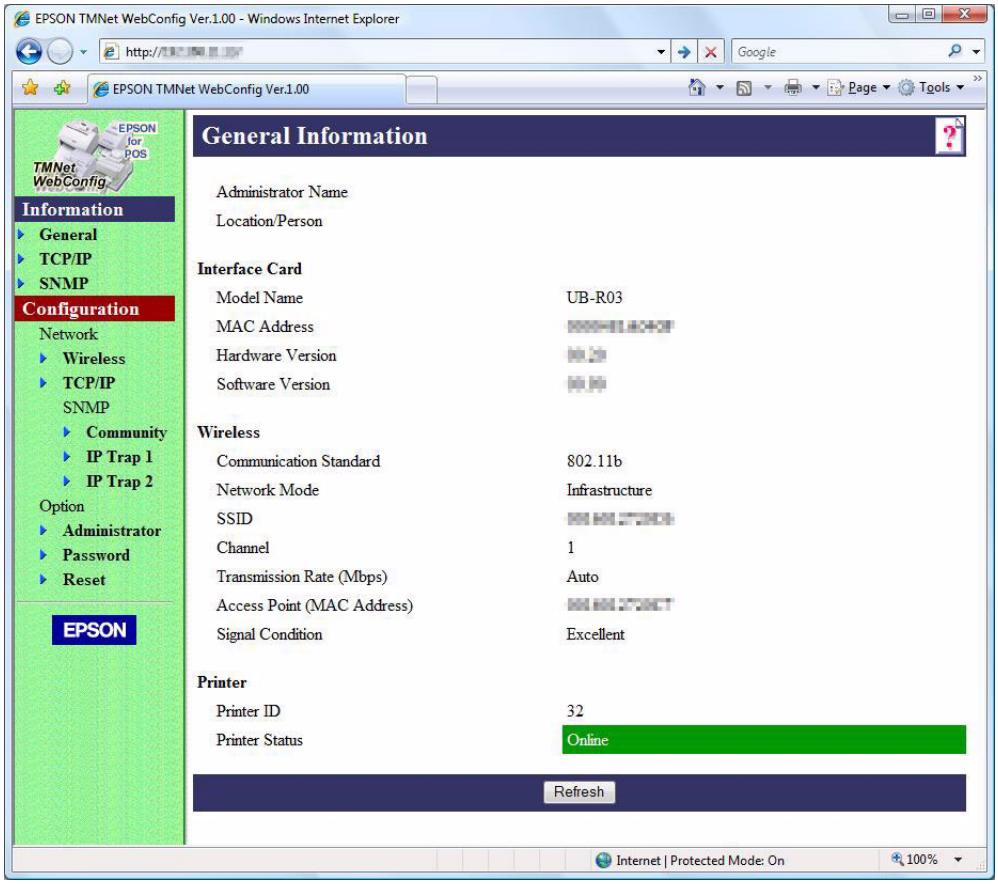
Follow the procedure below to activate the TMNet WebConfig.

1 Turn on the computer that can establish wireless connection with the UB-R03.

2 Start your browser and enter the IP address of the UB-R03. The TMNet WebConfig will start.
Address: http://(IP Address of the UB-R03)/



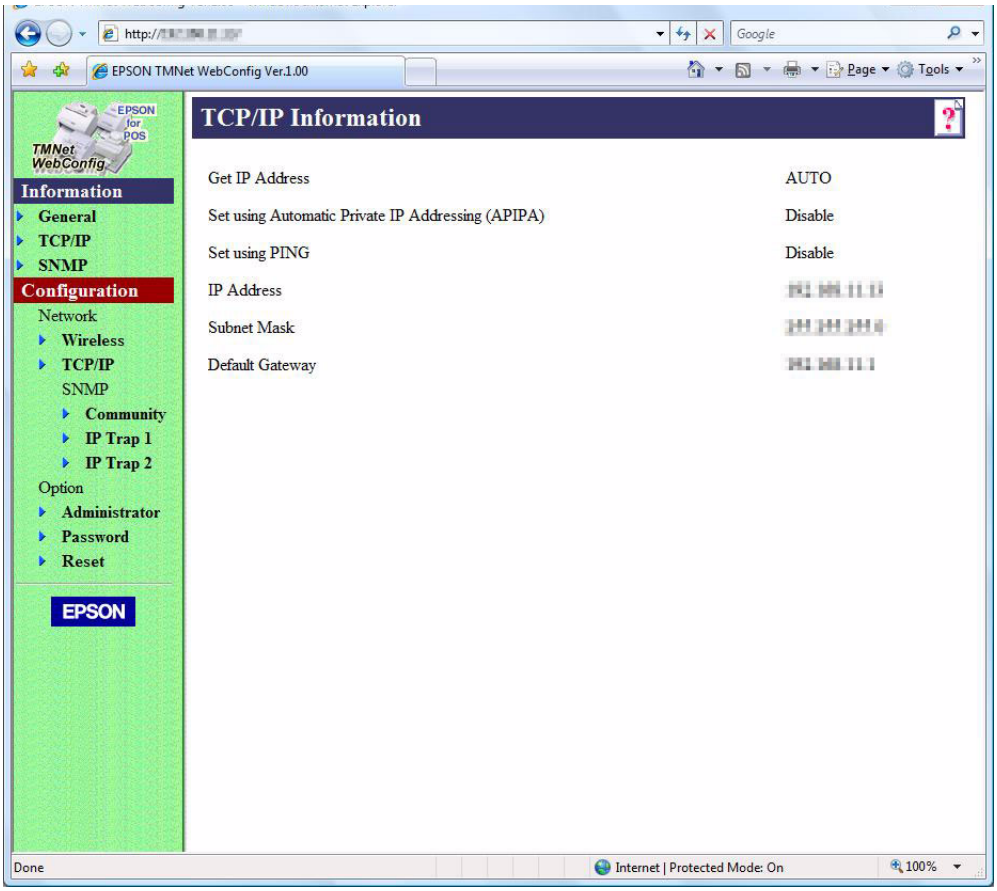
General Information



Item		Explanation
	Administrator name	Shows the administrator name.
	Location/Person	Shows the location or user name.
Interface card	Model name	Shows the name of the interface card.
	MAC address	Shows the MAC address of the UB-R03.
	Software version	Shows the software version of the UB-R03.
	Hardware version	Shows the hardware version of the UB-R03.

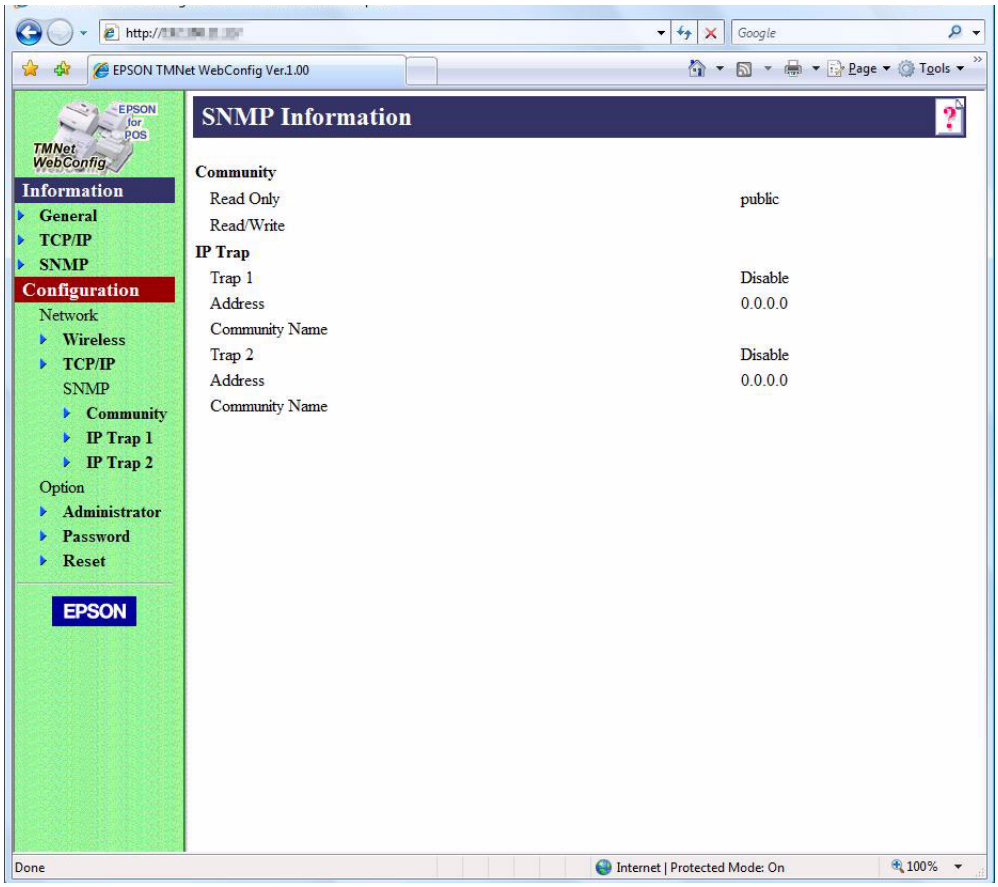
Item		Explanation
Wireless	Communication Standard	Shows the Communication Standard.
	Network Mode	Shows the Network Mode.
	SSID	Shows the SSID.
	Channel	Shows the Channel.
	Transmission Rate (Mbps)	Shows the Transmission Rate.
	Access Point (MAC Address)	Shows the MAC Address of Access Point.
	Signal Condition	Shows the Signal Condition.
Printer	Printer ID	Shows the printer ID.
	Printer status	Shows the printer status.

TCP/IP Information



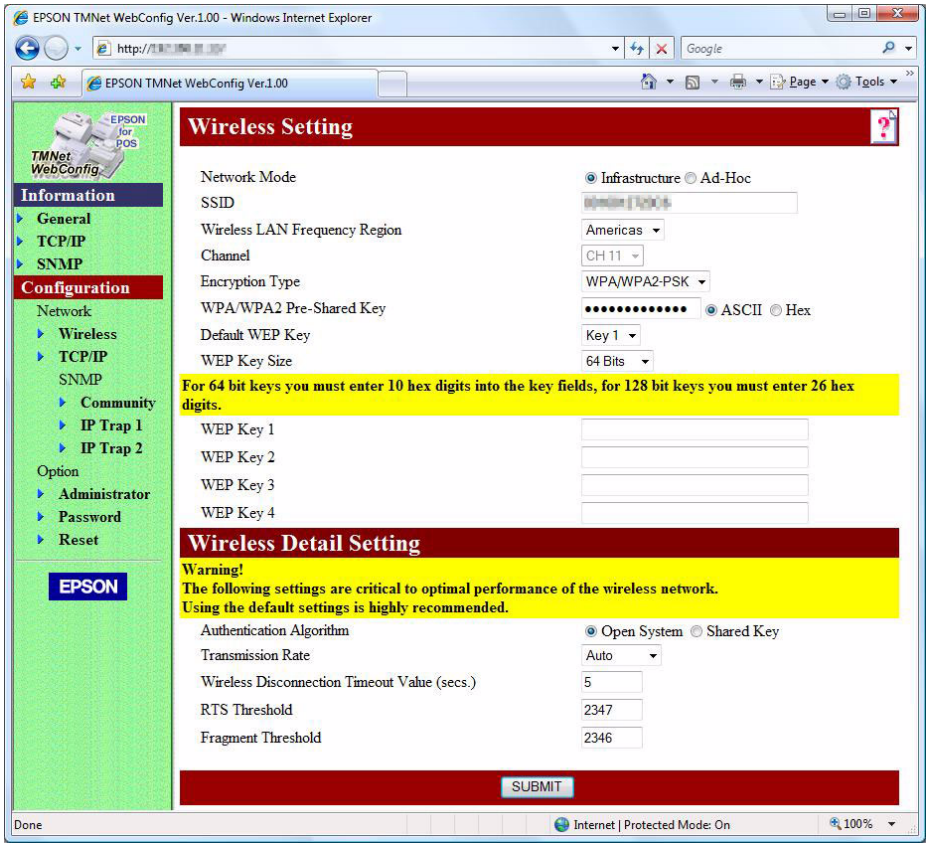
Item	Explanation
Get IP Address	Shows the method of setting the IP address.
Set using Automatic Private IP Addressing (APIPA)	Shows the APIPA setting.
Set using PING	Shows the IP Address using the PING (ICOMP Echo Request) command.
IP Address	Shows the IP address.
Subnet Mask	Shows the subnet mask of the IP address.
Default Gateway	Shows the default gateway.

SNMP Information



Item		Explanation
Community	Read Only	Shows he Read Community information.
	Read/Write	Shows the Read/Write Community information.
IP Trap	Trap 1	Shows the Trap 1 information.
	Address	Shows the Trap 1 Address.
	Community Name	Shows the Trap 1 Community Name.
	Trap 2	Shows the Trap 2 information.
	Address	Shows the Trap 2 Address.
	Community Name	Shows the trap 2 Community Name.

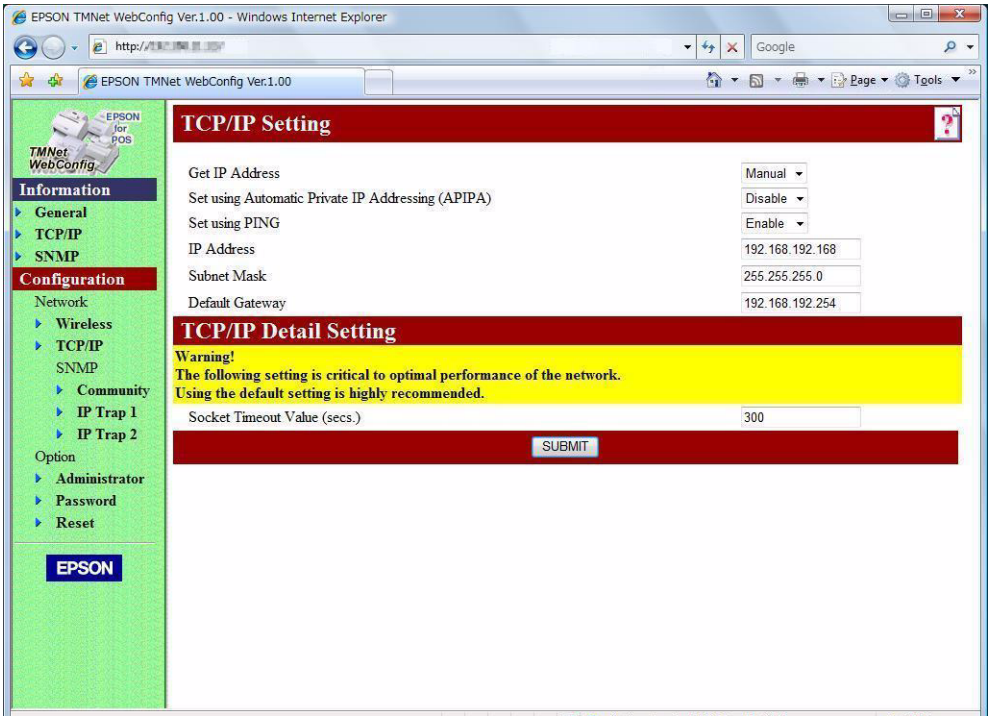
Wireless Setting



Item		Explanation
Wireless Setting	Network Mode	Set the Network Mode.
	SSID	Set the SSID.
	Wireless LAN Frequency Region	Set the Wireless LAN Frequency Region.
	Channel	Set the Channel. (settable only when Ad-Hoc mode is selected)
	Encryption Type	Set the Encryption Type.
	WPA/WPA2 Pre-Shared Key	Set the WPA/WPA2 Pre-Shared Key.
	Default WEP Key	Set the Default WEP Key.
	WEP Key Size	Set the WEP Key Size.
	WEP Key 1	Set the WEP Key 1.
	WEP Key 2	Set the WEP Key 2.
	WEP Key 3	Set the WEP Key 3.
	WEP Key 4	Set the WEP Key 4.

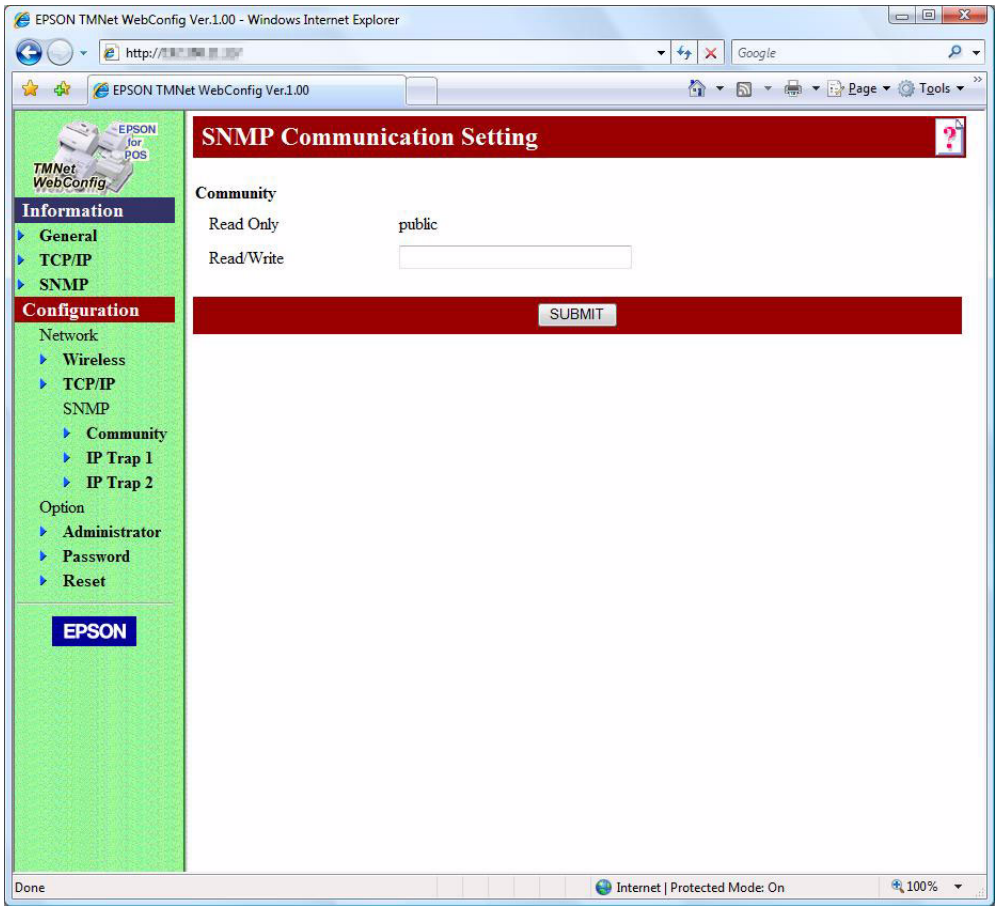
Item		Explanation
Wireless Detail Setting	Authentication Algorithm	Set the Authentication Algorithm.
	Transmission Rate	Set the Transmission Rate.
	Wireless Disconnection Timeout Value (secs.)	Set the Wireless Disconnection Timeout Value.
	RTS Threshold	Set the RTS Threshold.
	Fragment Threshold	Set the Fragment Threshold.

TCP/IP Setting



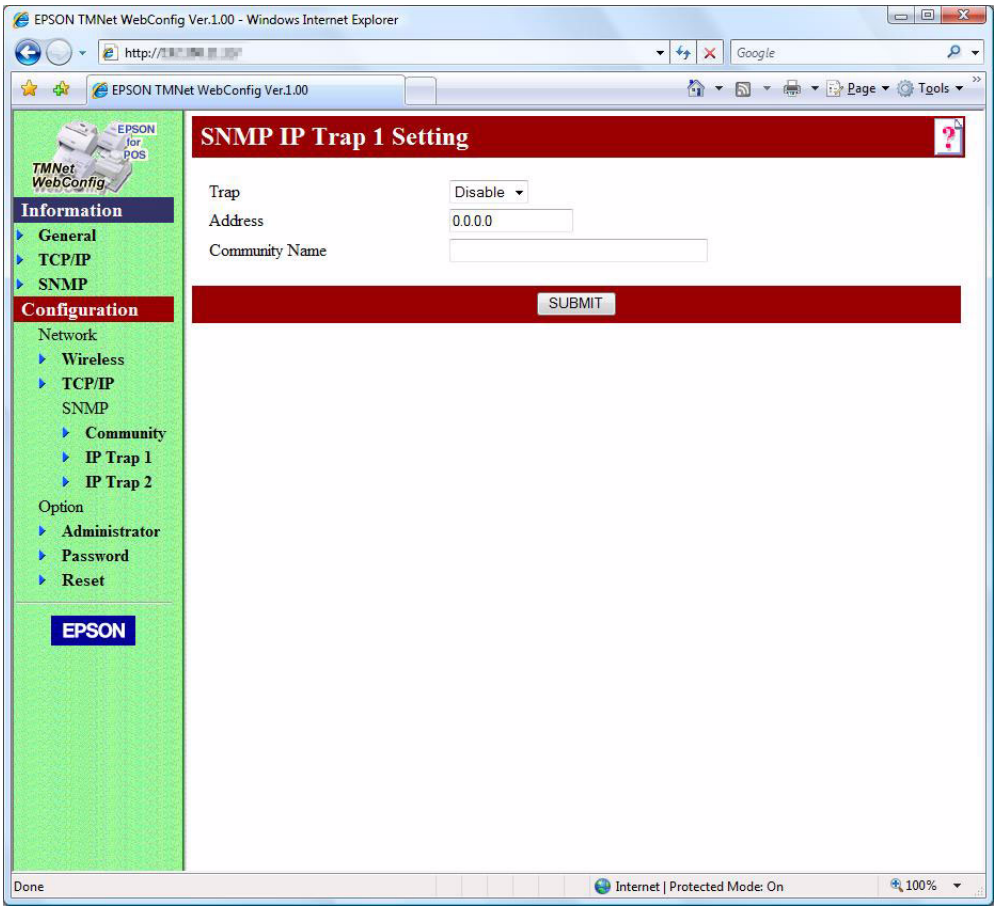
Item	Explanation
Get IP Address	Select the method of acquiring the IP address.
Set using Automatic Private IP Addressing (APIPA)	Set APIPA able/disable.
Set using PING	Set the IP Address using the PING (ICOMP Echo Request) command.
IP Address	Set the IP address of the UB-R03.
Subnet Mask	Set the subnet mask of the IP address.
Default Gateway	Set the default gateway.

SNMP Communication Setting



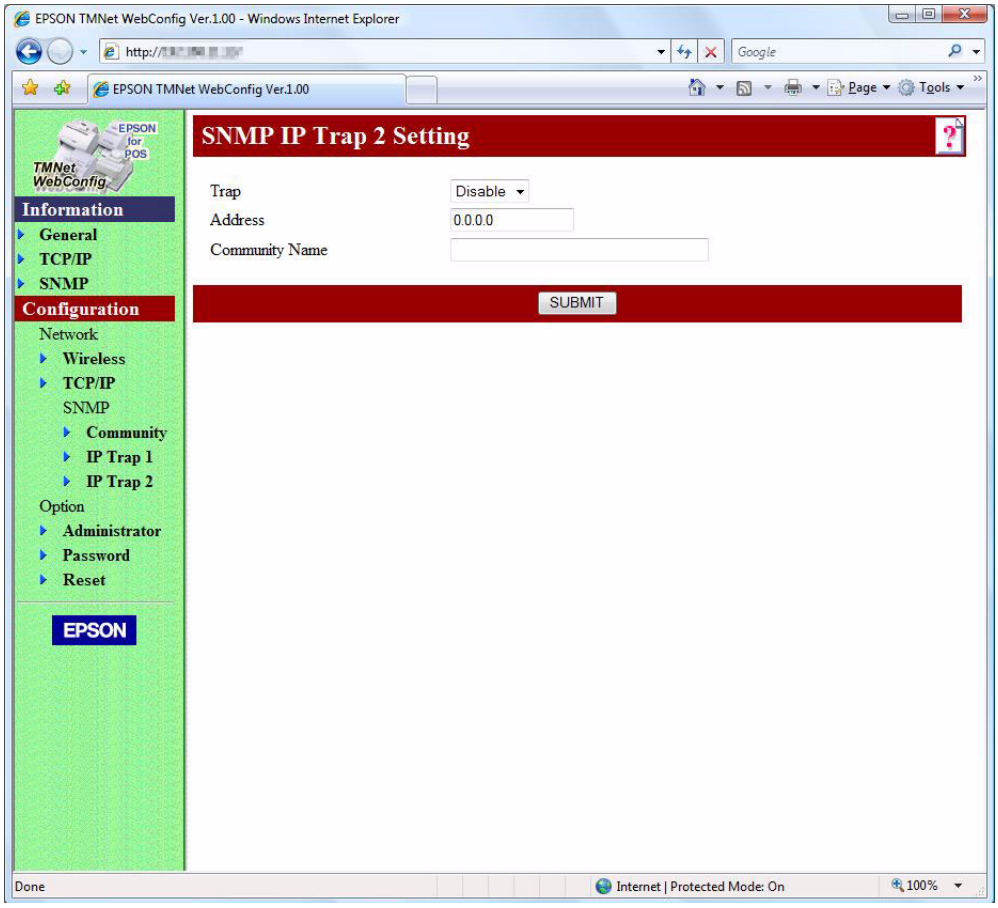
Item		Explanation
Community	Read Only	The setting is fixed to "Public."
	Read/Write	Set the Read/Write Community Name (up to 16 characters).

SNMP IP Trap 1 Setting



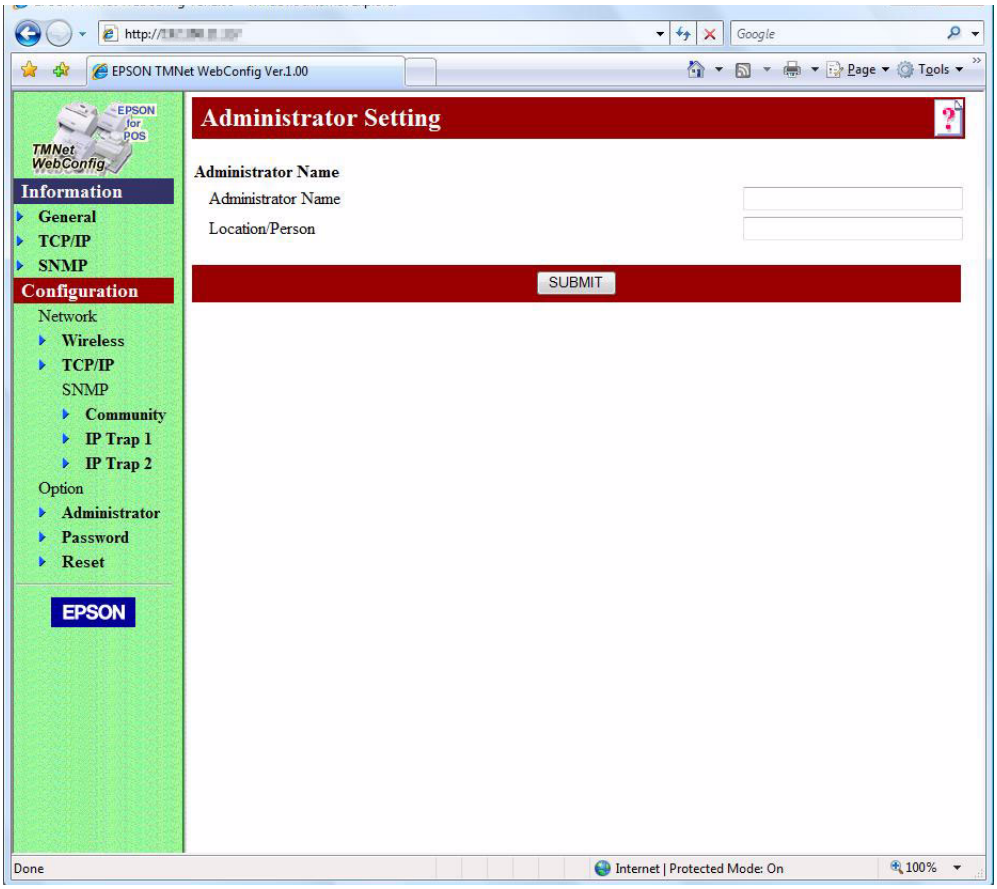
Item	Explanation
Trap	Set Trap 1.
Address	Set the Trap 1 Address.
Community Name	Set the Trap 1 Community Name.

SNMP IP Trap 2 Setting



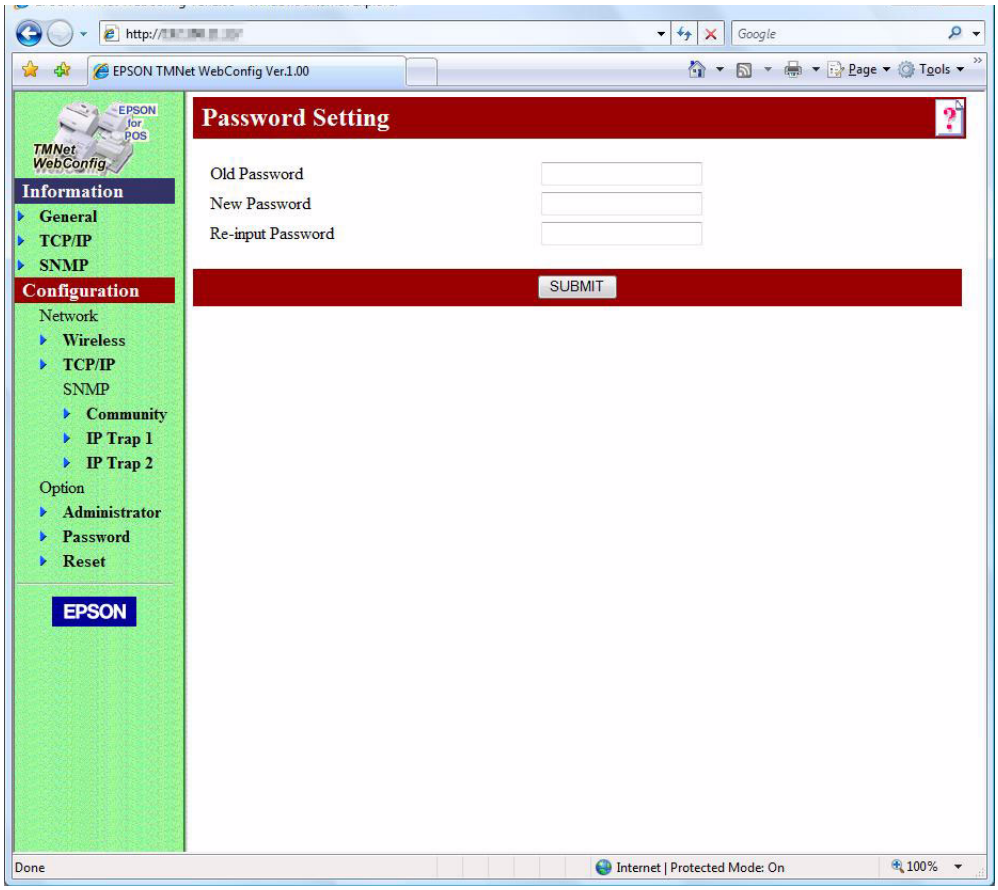
Item	Explanation
Trap	Set Trap 2.
Address	Set the Trap 2 Address.
Community Name	Set the Trap 2 Community Name.

Administrator Setting



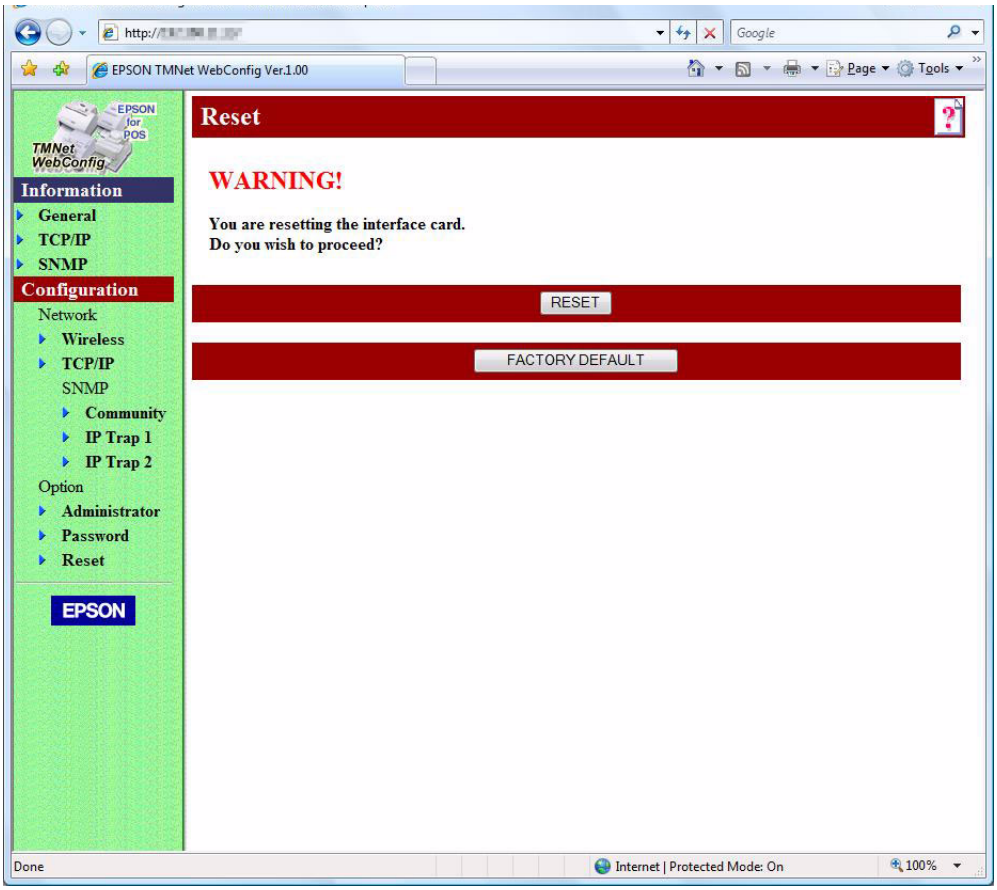
Item	Explanation
Administrator Name	Set the administrator name.
Location/Person	Set the location or user name.

Password Setting



Item	Explanation
Old Password	Input the old password.
New Password	Input the new password.
Re-input Password	Re-input the new password.

Reset



Item	Explanation
Reset	Reset the UB-R03.
Factory Default	The setting of the UB-R03 is changed to the factory default settings.

Set the IP Address using PING

Set the IP Address using the PING (ICMP Echo Request) command.

> **CAUTION** When setting the IP Address, take care not to overlap with the IP Address for using other network equipment and the computer.

When the "Set using PING" function is set to Enable, the IP Address can be set from the host in the same segment to which the ARP command and the PING command are supported.(Refer to "TCP/IP Setting" on page 64)

When an IP address is obtained with the Ping (ICMP Echo Request) command, the setting changes below follow:

- Changes the IP address to the obtained value.
- Changes the value of the subnet mask according to the obtained IP address class.
- Uncheck the check box of "Set using PING."
- Changes the mode to obtain an IP address to "Manual assignment."

After the above changes are made, the printer is reset.

Setting example

This section explains the setting example for setting the IP Address to 192.168.192.168.

1 Set the gateway address to the computer for input ARP/PING command.

When there are the server and the router for gateway, input the gateway address.
When there is no gateway, input the IP Address of your own computer to the gateway address.
If the gateway is not known, inquire of the network administrator.

> **NOTE** The IP Address cannot be set unless the gateway has been set.

2 Connect the printer in which the UB-R03 has installed with the network, turn on the printer.

3 Execute the arp command and relate the IP Address for setting the UB-R03 to the Mac Address of the UB-R03.

Input following format from the command line.
arp -s [IP Address] [Mac Address]
Example: using Windows
arp: -s 192.168.192.168 00-00-48-01-23-45

> **NOTE**
> The execution of the ARP command and the execution of the PING command must be executed within about two minutes. If it takes over two minutes, execute the command from step 3 again.
> The Mac address can be confirmed from the Dynamic Status Sheet.
> (For the printing of the Dynamic Status Sheet, refer to the "Printing a Dynamic Status Sheet" on page 38.)

4 Execute the PING command and set the IP Address.

Example: ping 192.168.192.168

5 When the PING command succeeds, the following messages are displayed. (The value of Time is changed.)

Reply From 192.168.192.168: Bytes=32Time<10ms TTL=255

6 Confirm that the IP Address is 192.168.192.168.

Programming Samples

This chapter describes the information for the programming of a TM printer that is set up for the wireless LAN system.

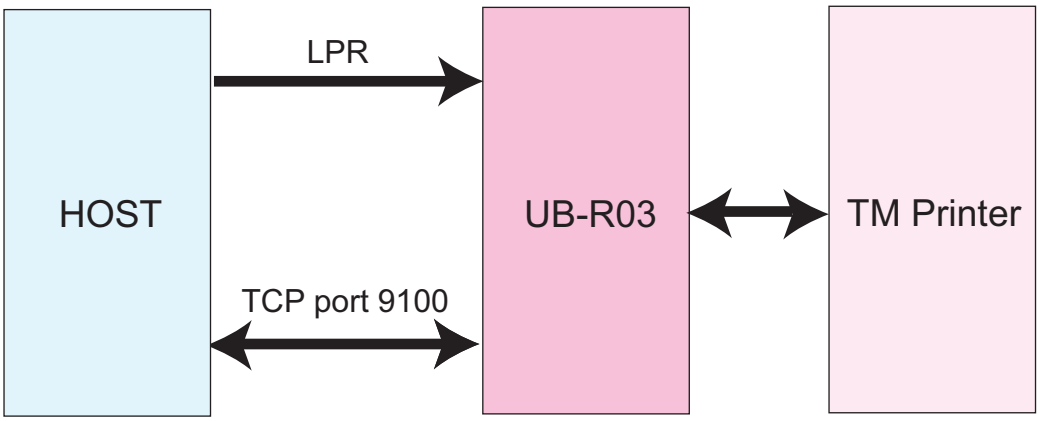
- Method of printing to the UB-R03
- Direct printing by PORT9100
- Monitoring of the ASB status
- More than one connection demands

Method of Printing to the UB-R03

The UB-R03 is equipped with lpr protocols as general print protocols. It is easy to print by using lpr or ftp protocols because the printing is also supported by the operating system.

However, the command statuses sent by the printer are ignored because the printing by lpr or ftp applies only to output of the printer.

The UB-R03 supports direct printing by TCP PORT9100. It is possible to control the printer directly by an application with the ESC/POS commands through writing and reading to the TCP PORT9100.



Direct Printing by PORT 9100

For Windows Console

The program is a sample of printing "EPSON UB-R03" to a TM printer with the UB-R03 from the Windows shell, through the ethernet connection.

```
---------------------------------------------------------------------------------------------------------------
/* TCP9100 programming sample for Win32
 * HOW TO BUILD
 *    cl tcp9100.c wsock32.lib
 */
#include <stdio.h>
#include <winsock.h>

int main(int argc, char* argv[])
{
  WSADATA data;
  SOCKET sock;
  struct sockaddr_in addr;

  if (argc != 2) {
    printf("usage: tcp9100 IP_ADDRESS\n");
    exit(1);
  }

  /* Initialize windows sockets */
  WSAStartup(0x0101, &data);
  /* Create sockets */
  if ((sock = socket(AF_INET, SOCK_STREAM, 0)) == INVALID_SOCKET) {
    fprintf(stderr, "Error socket(): %d\n", WSAGetLastError());
    exit(1);
  }

  /* initialize the parameter */
  memset(&addr, 0, sizeof(addr));
  addr.sin_family = AF_INET;
  addr.sin_port = htons(9100);
  addr.sin_addr.s_addr = inet_addr(argv[1]);

  /* connect */
  if (connect(sock, (struct sockaddr*)&addr, sizeof(addr)) < 0) {
    fprintf(stderr, "Error connect(): %d\n", WSAGetLastError());
    exit(1);
  }
  printf("connected\n");

  /* send data */
  send(sock, "\x1b@EPSON\x0a", 8, 0);

  /* close socket */
  closesocket(sock);
  return 0;
}
---------------------------------------------------------------------------------------------------------------
```

For Linux

The program is a sample of printing "EPSON UB-R03" to a TM printer with the UB-R03 from the Windows shell, through the Ethernet connection.

```
---------------------------------------------------------------------------------------------------------------
/* TCP9100 programming sample for linux
 * HOW TO BUILD
 *    cc tcp9100.c
 */
#include <stdio.h>
#include <string.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <netdb.h>

int main(int argc, char* argv[])
{
  int sockfd;
  struct sockaddr_in addr;
  if (argc != 2) {
    printf("usage: tcp9100 IP_ADDRESS\n");
    exit(1);
  }

  /* create socket */
  sockfd = socket(AF_INET, SOCK_STREAM, 0);
  if (sockfd < 0) {
    perror("socket()");
    exit(1);
  }

  /* initialize the parameter */
  memset(&addr, 0, sizeof(addr));
  addr.sin_family = AF_INET;
  addr.sin_port = htons(9100);
  addr.sin_addr.s_addr = inet_addr(argv[1]);

  /* connect */
  if (connect(sockfd, (struct sockaddr*)&addr, sizeof(addr)) < 0) {
    perror("connect()");
  }
  printf("connected\n");

  /* send data */
  send(sockfd, "EPSON UB-R03\x0a", 13, 0);
  /* close socket */
  close(sockfd);
  return 0;
}
---------------------------------------------------------------------------------------------------------------
```

Monitoring of the ASB status

The ASB status function of the printer is used for the UB-R03 to check the state of the printer. Therefore, when the transmission data from the application includes the command to nullify the ASB status function, the UB-R03 cannot control the state of the printer.

Take care not to transmit the command to nullify the ASB status function to check the state of the printer correctly by the UB-R03. Or retransmit the command that makes the ASB status function effective again.

More than one connection demands

The UB-R03 accepts up to six connection demands from LPR/Port9100. However, the TM printer can print only the first accepted connection.

Other connection demands enter the standby status until the connection being printing is closed.

When more than one connection is demanded and the host printer leaves the connection open after printing is complete, or the connection is cut without being closed because of some error, other connecting demands are not processed until the time-out of connection.

Close the connection at once after finishing printing by an application.

NOTE	The time-out of connection can be set with TMNet WebConfig. (Software version 2.10 or later) The default value is 5 minutes.

UB-R03 Specifications

This chapter describes the specifications of the UB-R03.

Software Specifications

Supported Protocols

The UB-R03 supports the following protocols.

Protocol	Application
IP, ARP, ICMP, UDP, TCP	Basic communications protocols for various functions.
LPR, TCP Socket Port	Protocol for printing.
DHCP, APIPA	Protocol for automatic settings of IP address, etc.
SNMP	Protocol for setting and check.
HTTP	Protocol using for TMNet WebConfig.
TFTP	Protocol to update the firmware.

Printing Protocols

The UB-R03 uses the following protocol for printing.

- LPR :Transfers printing data.

Port number	515
Maximum Simultaneous Connections	6
Number of connections that can print	1 (Other users must wait until the printing has completed.)
Time Out	Default: 5 minutes Can be set with TMNet WebConfig. (Software version 2.10 or later)
Job cancellation	Not supported
Banner printing	Not supported
Printing Job Queue	Not supported

- TCP Socket Port :Transfers printing data and printer status by direct socket communications (bi-directional).

Port type	TCP communication port for direct printing
Port number	9100
Port communication direction	Bi-directional
Maximum Simultaneous Connections	6
Number of connections that can print	1 (Other users must wait until the printing has completed.)
Time Out	Default: 5 minutes Can be set with TMNet WebConfig. (Software version 2.10 or later)
Job cancellation	Not supported

Automatic IP Address Assignment Protocols

The UB-R03 supports DHCP and APIPA, the protocols that assign an IP Address automatically. Automatic IP address assignment is performed with the protocols in the order of descending priorities shown in the table below. If automatic assignment with one protocol results in "disabled" or "failure," the subsequent protocol is used.

Protocol	Priority	Explanation
DHCP	1	Demand the assignments of the IP Address, the subnet mask and the getaway address to the DHCP server and set them.
APIPA	2	Assign only IP Address from following IP addresses. 169.254.1.0 to 169.254.254.255 In this case, it is not possible to communicate exceeding the router.
Manual assignment	3	When the automatic IP Address assignment protocol is set to unused, the manually controlled address is set.

Protocol for check and setting

The following protocols are used for the UB-R03 to check and set.

- SNMP : SNMP is used to acquire the starts and set of the TM printer by OPOS/APD.

SNMP Version	SNMP v1 (RFC1157) compliant (SNMP v2/SNMP v3 not supported)
Transport Protocol	UDP/IP
Server Port Number	161
Trap Sending Port Number	162
Trap Destination	Up to two settable IP Addresses (Default: Undefined)
Supported PDU type	Get Request, Get Next Request, Get Response, Set Request, Trap
Community	Each community name can be set with 16 ASCII characters or less.

HTTP

The TMNet WebConfig function is the exclusive Web page to acquire and change the network parameter of the UB-R03. The HTTP protocol is used.

HTTP Version	HTTP/1.1
Server Port number	80
Supported Language	English
Maximum Simultaneous Connections	1

Protection with a password

You can set a password for protecting the set content.

User Name	"epson" (User name cannot be changed.)	
Password	Default	:Undefined
	Type of characters settable	:ASCII characters
	Number of characters settable	:Maximum 20

NOTE

The password set by the TMNet WebConfig function is used as a password when setting by using the TMNet WebConfig V3.

TFTP

TFTP is used to update the UB-R03 firmware.

- With the TFTP command (Windows Vista/XP/2000)
- With the dedicated update utility

Network Parameter of the UB-R03

The following table shows whether Initial value and Refer/Setting are printed by printing of the Dynamic Status Sheet.

Articles	Parameters	Initial Value	TMNet WebConfig		Dynamic Status Sheet
			Refer	Setting	
IP address	-	192.168.192.168	Yes	Yes	Yes
Subnet mask	-	255.255.255.0	Yes	Yes	Yes
Gateway	-	0.0.0.0	Yes	Yes	Yes
DHCP	Enable/Disable	Disable	Yes	Yes	Yes
APIPA	Enable/Disable	Disable	Yes	Yes	Yes
ARP+Ping	Enable/Disable	Enable	Yes	Yes	Yes
Network Mode	Ad-Hoc/Infrastructure	Ad-Hoc	Yes	Yes	Yes
SSID	0-31 characters	EpsonNetIBSS	Yes	Yes	Yes
Channel	1-11	11	Yes	Yes	Yes
MAC address	-	(unique value)	Yes	No	Yes
Encryption Type	None/WEP/WPA2-PSK	None	Yes	Yes	Yes
Authentication Algorithm	Open System/Shared Key	Open System	Yes	Yes	Yes
Default WEP Key	Key1-4	Key 1	Yes	Yes	Yes
WEP Key Size	64 bits/128 bits	64 bit	Yes	Yes	Yes
WEP Key 1-4	-	(no value)	Yes	Yes	No
Transmisson Rate	Auto/1 Mbps/2 Mbps/ 5.5 Mbps/11 Mbps	Auto	Yes	Yes	Yes
RTS Threshold	0 - 2347	2347	Yes	Yes	Yes
Fragmentation Threshold	256 - 2346	2346	Yes	Yes	Yes
Wireless LAN Frequency Region	-	Americas	Yes	Fixed	No
WPA/WPA2Pre-Shared Key	0-63 ASCII characters, or 64 Hexadecimal characters	(no value)	Yes	Yes	No
Wireless Disconnection Timeout Value	0-300	5	Yes	Yes	Yes
Administrator Name	0-255 ASCII characters	(no value)	Yes	Yes	No
Location/Person	0-255 ASCII characters	(no value)	Yes	Yes	No
Password	0-32 ASCII characters	(no value)	Yes	No	No
Model Name	-	UB-R03	Yes	Fixed	No
Community name 1	-	public	Yes	Fixed	Yes
Community name 2	0-16 ASCIIcharacters	(no value)	Yes	Yes	Yes
IP Trap 1 Enable	Enable/Disable	Disable	Yes	Yes	No

Articles	Parameters	Initial Value	TMNet WebConfig		Dynamic Status Sheet
			Refer	Setting	
IP Trap 2 Enable	Enable/Disable	Disable	Yes	Yes	No
Community name (IP Trap #1)	0-16 characters	None	Yes	Yes	No
Community name (IP Trap #2)	0-16 characters	None	Yes	Yes	No
IP trap #1 address	-	0.0.0.0	Yes	Yes	No
IP trap #2 address	-	0.0.0.0	Yes	Yes	No
SNMP General Current Operator	0-127 characters	(no value)	No	No	No
SNMP General Service Person	0-127 characters	(no value)	No	No	No
SNMP Input Media Name	0-63 characters	(no value)	No	No	No
Socket Timeout*	1-300 sec	300 sec	Yes	Yes	Yes

*: Version 2.10 or later

Setting of the network parameter of the UB-R03

The network parameter of the UB-R03 can be set by the following methods:

- TMNet WinConfig V3
- Setting using a Web browser (TMNet WebConfig function)
- Using the ARP address (Only the IP Address)

How to check the Mac Address

The Mac address of the UB-R03 can be checked with the following method:

- Printing the Dynamic status sheet
- Label attached on the product
- A printer self-test (May not be supported by some TM printers.)
- TMNet WinConfig V3
- Web browser (TMNet WebConfig function)

System Bootup Time

The UB-R03 requires some bootup time for initializing the system or network functions after power-on or system reset. The required bootup time is as follows. The network communication functions are unavailable during system bootup.

When setting the IP address in the Manual mode : Approximately 6 to 10 seconds

When setting the IP address automatically : Approximately 13 to 17 seconds

(Above values may vary, depending on the response time of the DHCP server.)

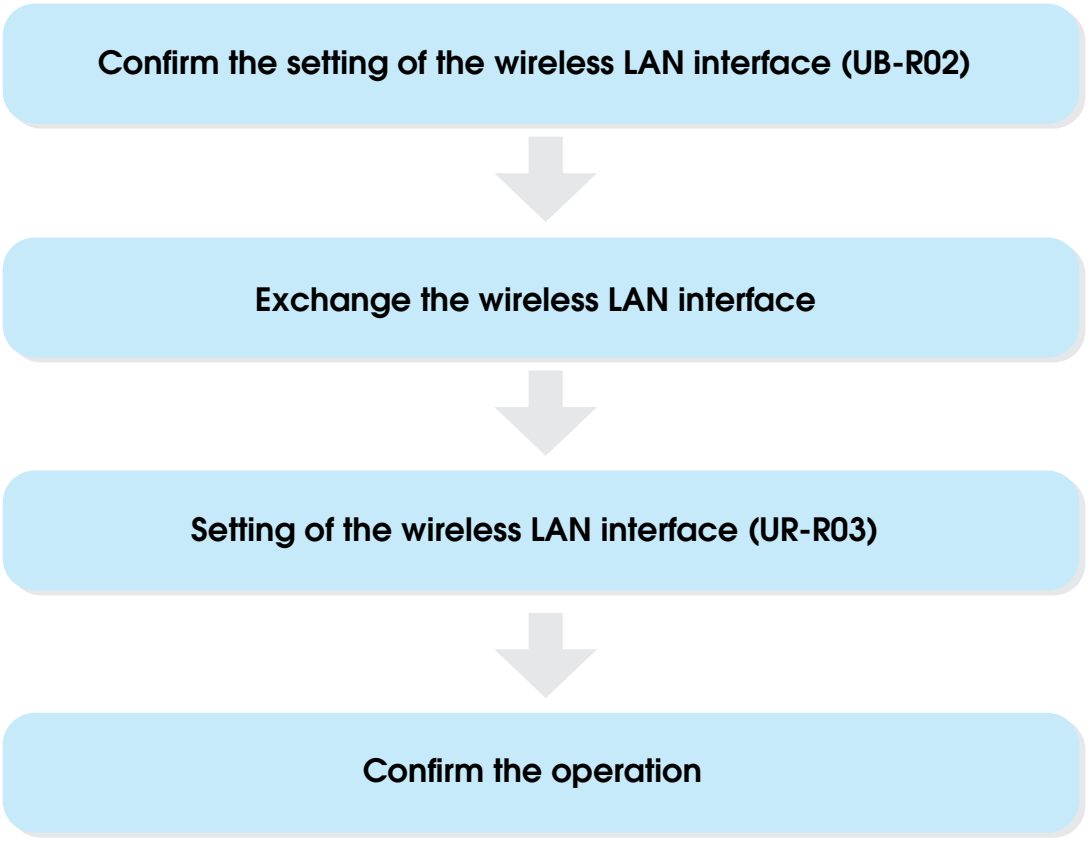
Exchange from the UB-R02

This chapter explains how to replace the UB-R02 with the UB-R03. This operation can be done without changing the application.

Comparison of the UB-R02 and the UB-R03

		UB-R02	UB-R03
Basic Specification	Wireless LAN standard	802.11b	
	Network Mode	Ad-Hoc/Infrastructure	
	Supported Cannel	1-11 ch	
	Security	WEP(64 bit/128 bit)	WPA/WPA2-PSK WEP(64 bit/128 bit)
Composition	TMNetWinConfig	TMNet WinConfig V2	TMNet WinConfig V3
	TMNet WebConfig	UnSupported	Supported
	DHCP	Supported	
	APIPA	Supported	
	ARP+Ping	Supported	
	USB connector (Parameter Setting)	UnSupported	Supported
Support Driver	OPOS	Supported	
	JavaPOS	Supported	
	APD	Supported	
	Port9100	Supported	
	LPR	Supported	
Environmental Specifications	Temperature	0 to 50°C {32 to 122°F}	
	Humidity	10 to 90% RH	

Procedure for exchanging


Confirm the setting of the wireless LAN interface (UB-R02)
Exchange the wireless LAN interface
Setting of the wireless LAN interface (UR-R03)
Confirm the operation

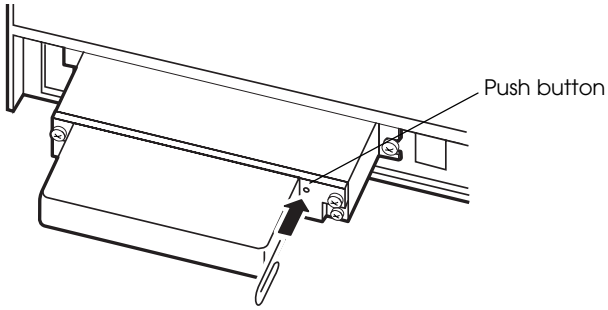
Confirm the setting of the wireless LAN interface (UB-R02)

Confirm the shifting data after printing the parameter sheet of the printer.

The method of printing of the parameter sheet of the UB-R02 is as follows.

Power on the TM Printer, and after waiting 5 to 6 seconds, hold down the push button of the UB-R02 for more than 3 seconds by using a clip or penpoint.

The parameter sheet of the UB-R02 is printed. The setting value necessary to connect the network can be confirmed.



An example of a parameter sheet

```
************************************************
MAC:**:**:**:**:**:**
HW/SW:1.00/1.20
WLAN:4.4.1/8.10.1

SSID:EpsonNetIBSS
Mode:Ad-hoc
Link:Connect
Channel:11
Tx Rate:Auto
RTS Thresh.:512
AP Density:Low
Auth.:Open System
WEP:OFF
AP:**-**-**-**-**-**

GET IP:Manual
APIPA:OFF
PING:OFF
IP:192.168.192.168
Mask:255.255.255.0
GW:0.0.0.0

Legacy APD:OFF
Factory 1:ON
************************************************
```

Necessary item for the network setting

WEP Key

The WEP key is not printed on the parameter sheet. Please acquire it from the network administrator.

Exchanging of the wireless LAN interface

Uninstall the UB-R02 from the printer and install the UB-R03 in the printer. Refer to Chapter 2.

Setting of the wireless LAN interface (UR-R03)

Set the wireless LAN interface (UB-R03) printer.

Setting the UB-R03

Set the network setting of the UB-R03 referring to Chapter 2.

Confirm the operation

Confirm whether the print is actually possible in a new environment.

Confirm the operation in the user's environment (OS, application, and driver).